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Ray Harryhausen on Acting Without the Camera

For environmentalists, wildlife would often suffer casualties when an oil spill occurred. Some scientists have said that it is unlikely that a large-scale oil spill would threaten the same extent to the breeding pairs of Laysan, Hawaiian monk seals and Hawaiian monk seals as the highly endangered Laysan albatross, which has spawned more than 100,000 chicks in the past 10 years.

Charles and the (Peanut) Butter Flare.	161
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The investment strategy that The Shareholders has followed over years is to concentrate on acquiring quality, family-owned, medium-sized to large companies in mature industries. Subsequent investment in that company is then done to improve the company's profitability and growth. The company has been involved in buying companies that are among the most profitable in their industry, and in the last five

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When questions regarding effects are considered, their timing and use and consequences for the industry is a consideration regarding changes. In August, a representative said there is a strong possibility of the National Bureau and the increasing working interest. However, the fact is that the industry is not likely to be able to sustain the current level of investment in the industry, and the industry is not likely to be able to sustain the current level of investment in the industry.

Comments: The final score.....

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RAY HARRYHAUSEN ACTING WITHOUT THE LUMPS

image

interview by

Vic Cox

Contrary to rumor, Ray Harryhausen was not brought to life by Zeus or any other mythical godhead. The famed stop-motion animator, now 61, is mortal, the only child of the late Martha and Fred Harryhausen. Although London is his workplace and home — shared with wife Diana and daughter Vanessa — he is a native of Los Angeles.

Infected by the grandeur of Willis O'Brien's animation in King Kong, Harryhausen knew as a teenager that his destiny lay in creating cinematic fantasy. At that point, however, he did not realize the tortuously painstaking nature of a movie-making technique that could require a month's work to produce a minute of film for the screen. Indeed, stop-motion animation was an art O'Brien was still trail-blazing when Harryhausen embarked on his own voyage of discovery. Since no film classes were available to the young high school student, Harryhausen purchased a used 16mm camera and began learning through trial and error. Meanwhile, he studied drawing, sculpture, and in college, drama and theater arts.

In the late 1930s, Harryhausen finally met his idol and, later, mentor Willis O'Brien. A subsequent stint with George Pal's "Puppetoons," followed by three years in the U.S. Army Signal Corps, led to Harryhausen's animated versions of popular fairy tales, all of which are still in nontheatrical circulation. But it was to be O'Brien who would afford the 26-year-old animator his first feature film experience. The movie was the Academy Award-winning Mighty Joe Young, and Harryhausen was heavily involved in the two-year project, personally producing an estimated eighty-five percent of the film's final animation. After rejoining briefly with O'Brien, and his wife Darlyne, to help illustrate a story proposal that was never to be made, Harryhausen did The Beast from 20,000 Fathoms — his first sole credit for technical effects. Based on an idea from a magazine short story by childhood friend Ray Bradbury, The Beast from 20,000 Fathoms was a very low-budget, dinosaur-on-the-rampage movie which scored enthusiastically at the boxoffice.

The following year, Harryhausen met a young producer who wanted to make a film featuring a giant octopus pulling down the Golden Gate Bridge. His name was Charles H. Schneer, and together the two laid waste to San Francisco in It Came from Beneath the Sea — using only six of the octopus' eight tentacles. It was the beginning of a fecund partnership that now spans thirteen films and nearly three decades. In association with Schneer, the stop-motion master has brought to screen-life legions of prehistoric monsters, spaceships, alien beings, mythological beasts and magical creatures.

Today, Harryhausen bestrides the kingdom of fantasy films like Talos, his bronze colossus from Jason and the Argonauts. Widely hailed as the top animator in the business, Harryhausen's skill and imagination have finally won big-budget support from Metro-Goldwyn-Mayer. The result of over two years' work is the \$16 million Clash of the Titans, now in release. Although Harryhausen has made three movies with science fiction themes, Clash of the Titans demonstrates once again that his milieu is cinematic mythology — a genre he has

made singularly his own and through which he may well be laying claim to another kind of immortality, one conferred by the specialness of his work rather than the grace of gods.

Your interest in fantasy seems to be mostly from the point of view of a romantic, one who respects the mystery of life and nature and who works with it in its various forms. You have been quoted as saying that science fiction turns you off, the way it is usually done, because it seems so cold and impersonal.

Right. That is why I like to go into the past rather than the future — because everything is gadgetry and technocrats and technization, or whatever you call it. Naturally, it is cold. Every picture that has been made about the future suggests that we're in for a ghastly experience, where you are dehumanized into being a robot. You can't really inject much romance into that kind of thing. That's why I like the past where there were heroes — although many times they may have been superficial — and the idea of good and bad, such as in fairy tales. The fantasized figures of dragons and ghouls and various monsters all have a relation to abstract ideas. I think it goes into oriental philosophy, because you get a perspective on every living thing. I think it is a miracle that anything moves. When I've worked so hard to make a dummy move, I can see what God is up against.

Do you recall when and how you were drawn to fantasy films?

Fantasy has been with us since the silent films, with Georges Melies and Fritz Lang making marvelous ones, such as *Metropolis*. I grew up on those old films. I guess that got me on the road, so to speak, of imaginary films. I remember vividly my first sight of *The Lost World* that Willis O'Brien made in 1925. The main thing that impressed me — I was four or five then — was a big brontosaurus falling off a cliff and lying in a swamp covered with muck. His head moved around like a huge snake. I couldn't believe, at that tender age, that animals like this ever existed. As I grew older, and got hit on the head with *King Kong*, I began to explore paleontology much more.

I saw *Kong* when it first came out in 1933, quite by accident. My aunt worked for Sid Grauman, as a nurse, taking care of his mother. Somehow, she got free tickets for a strange film at the Chinese Theatre called *King Kong*. She took me one afternoon, and I've never been the same since. I became fascinated with matte shots — the fact that what you see on film is not necessarily what they photographed on the set. I remember some displays out at the Los Angeles Museum. They had one room devoted to various phases of motion picture production. They had the throne from *She*, a model dinosaur from *The Lost World* which was a gift from Willis O'Brien; and then they had a little miniature plane that he presented to the museum and a wooden figure of *King Kong* — various things like that. Then they had a display of clips showing matte shots and traveling mattes — the Williams process and the Dunning process and how they were put together. It was fascinating, and I used to spend hours there.

Why do you suppose King Kong has grown to such classic stature?

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I suppose it was the extreme, bizarre, audacious excursion into fantasy that made it become a classic. The whole idea of a lost world was fresh at the time, although it's been copied many times since then. The film was constructed to take you from the

Ray Harryhausen's first feature work was on *Mighty Joe Young*, in which he produced about eighty-five percent of the film's animation under the supervision and tutelage of Willis O'Brien.

image

mundane, poverty-stricken Thirties to the most outrageous story every told, and so gradually that you accepted it. When you finally saw Kong, you didn't say, "Oh, no!" and walk out, like you do for so many pictures. That was its basic cleverness — the leading of the viewer. Of course, today you have to start out with a bang. As Samuel Goldwyn said, "Start out with an earthquake and build to a climax."

Roy The Behat's 2000 Offshoots, his first film to be based on a story he had created by himself, of a giant ape, which he had used to place his animated figures into live-action background plates.

You certainly did that in the opening reel of Clash of the Titans with the destruction of Argos.

Yes, I guess we did. That technique, I think, comes basically from television. They have to capture you before the first commercial, so they give you a "whammy" right at the beginning and then try to build. Dramatically, though, I don't think that's as satisfying as the way *Kong* was structured. But people have been so overexposed to entertainment since the Thirties — inundated with entertainment, I should say — that they have a tendency to be two jumps ahead of the writer. *Kong* had that mystery element, which is the basis of all good fantasy, and it kept a certain amount of logical structure. The producers didn't do bizarre things just for the sake of doing bizarre things — there was always at least a slight basis of logic.

I always feel that way about H.G. Wells' writing. The way he described the principal of making a man invisible, for example, was to compare it to the disappearance of a pane of glass when it is submerged in water. That is so logical and simple that a person can see that it's possible to make something that would dissolve your molecules, and yet not disorganize them to the point that you die. Many fantasies fall apart because anything can — and *does* — happen, just for the sake of excitement. That, I think, is disaster to a fantasy film, and that's one of the major problems with the Japanese approach. They go so way out that the absurdity overcomes the intriguing qualities of what they are trying to do. The lesson of *Kong* on the island was also glossed over totally by the producers of the new *Kong*. All the fantasy elements were left out except for the minor fantasy of a great big gorilla. I think they looked at it as the story of an outsized gorilla in love with a girl, and nothing more. Therefore, they ignored the fact that the dinosaurs in the original film had a fantasy all their own. They spent \$25 million on that remake, and one can't help but wonder where all the money went. It certainly wasn't on the screen. Can you imagine spending \$2 million on a giant mechanical monster that didn't even work properly?

Given your youthful interest in dinosaurs, were you aware of O'Brien's work on Creation and how it influenced King Kong?

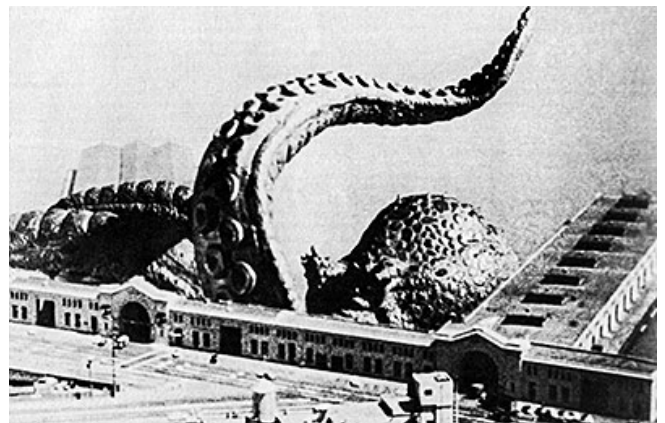
I didn't know the history of how *Kong* came into being until many years later. A drawing led me to discover some of it. I was walking in downtown Los Angeles, near the old Mayan Theatre, sometime in the late Thirties, when I passed a little art shop that had three big drawings in its display window. One was an *arsinoitherium*, knocking men off a log; another was a *pterodactyl* picking up a girl; and the last was of Mayan ruins with a girl pointing at a giant ground sloth. I couldn't believe it. I almost passed out! I thought that they might have come from *King Kong*, particularly the log scene, so I went in and asked where these wonderful drawings had come from. The man in the store said he had purchased them in a Bekins' auction and placed them on display because he liked them. I don't

remember how much he wanted for them, but I didn't have the money, so eventually I managed a trade. I made three clay horses that were later bronze-coated and he gave me the drawings, which I still have in London.

Do you recall how your first meeting with Willis O'Brien came about?

It was in 1938 or 1939. I'm not sure of the date, but it was when he was working on *War Eagles* at M-G-M. I had been experimenting for several years with 16mm stop-action photography, and through a friend of mine was encouraged to call him at M-G-M. He seemed a very understanding and kind man. He didn't try to put you off with the usual rigmarole you find in Hollywood. I called him up several times, and he encouraged my interest in dimensional animation, probably because there weren't that many people at the time with such an interest. I had just won a top prize in the Los Angeles Museum's junior competition for a model stegosaurus I had built, and I wanted to show it, and some other models, to him. He said, "Come up to my office," so I packed them in a small suitcase and went over to the studio.

I had expected that he'd have a normal office — and of course, it wasn't a normal office. It was filled with drawings. There were sketches from his new film, some of which showed hoards of giant eagles, with a type of Cro-Magnon man riding their backs, invading New York City. Some were painted in glorious water-color and others in oil, but the majority were drawn in a bold charcoal technique. There were also two or three other rooms with many more drawings. I was awed, but Mr. O'Brien, being a true gentleman, placed me at ease with his friendly and patient reception. I was rather proud of my stegosaurus, because it was on exhibit at the museum, but then he said; "You've got to put more character into it. The legs look too much like sausages." He was right, of course, but I hadn't looked at it from that point of view. So I went back to studying Charles Knight's wonderful dinosaur paintings, and I began to build muscle structure onto my animals so it would look like the legs could support the weight. I became very conscious of what muscles did what, and I started studying anatomy and bone structure. It opened a whole new door to me.



It Came from Beneath the Sea marked the first involvement of Ray Harryhausen with his long-time producing associate, Charles H. Schneer. To save money and facilitate animation, a six-tentacled octopus was employed.



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Harryhausen worked with Willis O'Brien once again on the opening dinosaur sequence to *The Animal World*. Unlike earlier animation films, which featured puppets painstakingly built up around individual armatures, the multitude of dinosaurs in this quasi-documentary were sculpted first in clay and then cast from molds.

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The UFOs in *Earth Vs. the Flying Saucers* were produced via Harryhausen's stop-motion technique, as were shots of crumbling buildings and historical structures likewise filmed a frame at a time using a complex network of invisible wires.

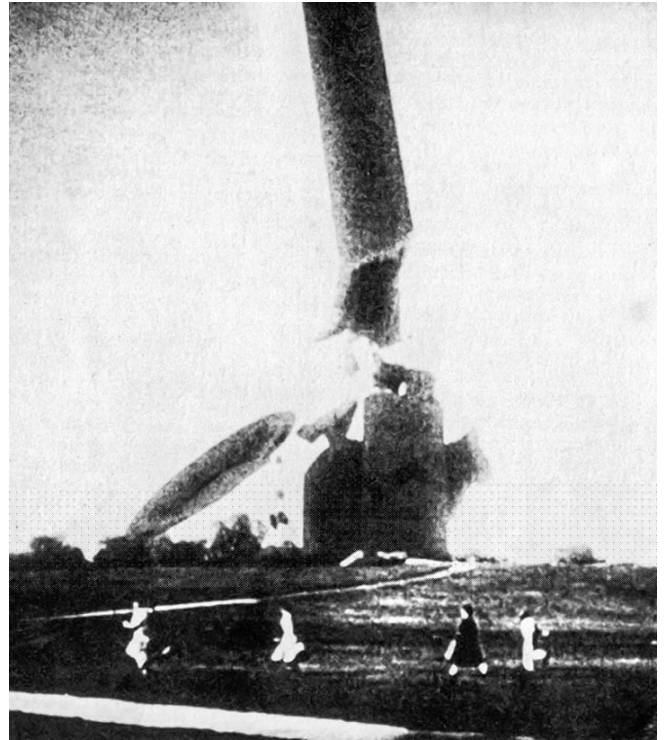
After high school, didn't your improved model building and stop-motion experience land you a job with George Pal doing "Puppetoon" short subjects?

Yes. Pal gave me my first steady job. He had come over from Europe to start "Madcap Models" for Paramount Pictures. I was contemplating going back to school when I got the job. "It's not what I really wanted to do," I thought, "but it's in the right direction." Short subjects were popular then, but they became too costly. Most of Pal's puppets were cut from wood and animated by following the isometric drawings of a cartoonist. All you had to do was substitute a new figure, and put the right head on at the proper moment. There wasn't much excitement in doing that. I much preferred working with free-form figures. Everything was so stylized that you couldn't do the type of drama I wanted to get my teeth into. But it was all good training. We had deadlines and we had to work hard to finish a picture. I didn't get a chance to personally design anything there, but I did do animation. It was departmentalized, like any cartoon studio: someone built the sets; someone else painted them in the paint room; and then they went to another room for completion. I think Pal was committed to making six a year, so it was quite a grind. Sometimes, working late at night — about 2 a.m. — I can remember getting terribly giddy and falling over the camera. I don't get involved working until 2 a.m. any more — at least if I can help it. It lessens your creative powers.

You're now referred to as the dean of stop-motion animators, but your initial efforts in the form of fairy tales weren't graced with immediate success. Do you feel that you got to where you are today because you persevered, always believing you were right?

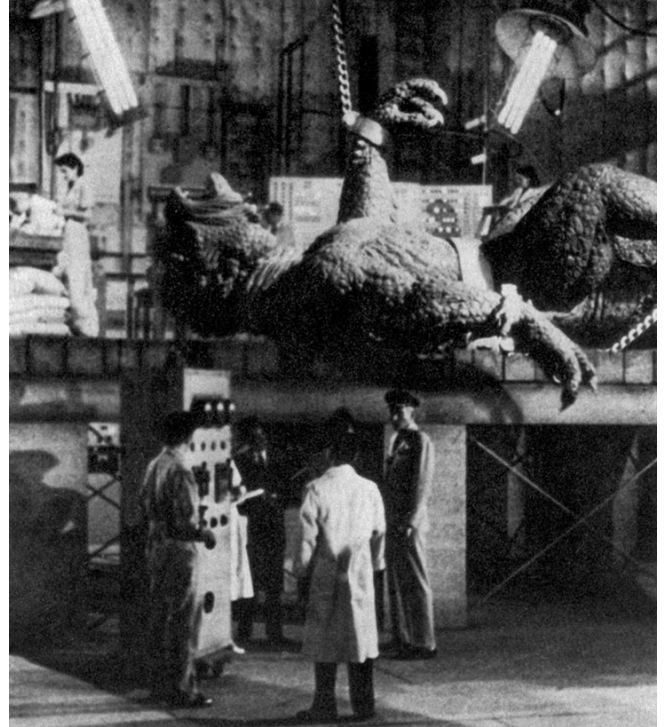
Yes, but that's true of many people. You're always unsure of yourself, up to a point. Even after the point of success, however, there is still a certain horror that you may be wrong. It is discouraging to many artists. It takes a fanaticism, a stick-to-it quality, regardless of what the signs are. Sometimes it's called stubbornness, I suppose. But I think to be a fanatic — which has taken on a negative connotation over the years — is essential in order to bridge all the pitfalls of discouragement.

I learned one of my best lessons at an early stage when I started making the Mother Goose stories. It was after the war, and I had some outdated film left over, so I decided to make some fairy tales. I did a lot of research, tried to find the origin of different tales, and I thought I'd be methodical and go to the schools to find out what they could use. I met various principals and educational authorities, and they had such different points of view that it became terribly confusing. I almost gave up the idea. Then I thought: "I can't please everybody. The segments will only be three minutes long. I'll



*The UFOs in *Earth Vs. the Flying Saucers* were produced via Harryhausen's stop-motion technique, as were shots of crumbling buildings and historical structures likewise filmed a frame at a time using a complex network of invisible wires.*

just do what I like and take the consequences.” So I ignored everything that I’d been told and did it my way. When I finished, I took them back to the schools. One principal didn’t like the red background on the titles — she said it would excite the children too much. Another principal asked: “What happened to the yoke in *Humpty Dumpty* when he fell off the wall?” It was most discouraging, but I looked for a distributor, thinking that they might be sold to television. I ended up assembling *Humpty Dumpty*, *Mother Hubbard*, *Miss Muffett* and others together on a 400-foot reel. Mother Goose presented a prologue and epilogue, so they became her stories. After a distributor was found, I made a few more subjects such as *Hansel and Gretel*, *Rapunzel*, *Little Red Riding Hood*, and *King Midas*.

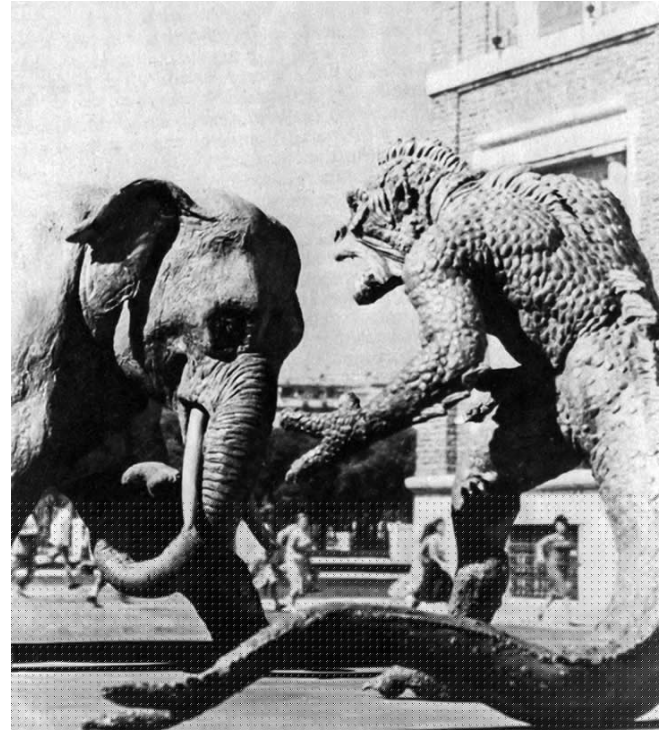


In 20 Million Miles to Earth, a creature from Venus quickly grows to monstrous proportions. After a fight with a stop-motion elephant and an obligatory rampage through the streets of Rome, the unwelcome beast is destroyed atop the Coliseum.

The whole experience taught me the firm lesson that you have to pursue what you like, because you can't keep asking everybody what *they* think is right. An artist has to create something from nothing, and he has to see it grow and bloom from his or her own flowerpot, so to speak. It was a blessing that my family supported my early efforts so strongly. My father was an engineer — a machinist — and he became quite interested in the mechanics of building the armatures. He also built a great many of my props. My mother taught me how to make papiermache heads in the beginning, and she also made most of the costumes for the fairy tale characters. They could've just as easily said, "Get out of here and be a doctor, or follow some other profession that is going to bring in money," but they didn't. Although being a doctor or a lawyer didn't appeal to me, I did, however, develop my skills so that if animation didn't work out I could always go into commercial art.

Isn't it hard to maintain a creature's proper size in different scenes in feature film animation? It seems to have been a problem at least since Mighty Joe Young, your first feature, as well as the first time you worked with Willis O'Brien.

I've been criticized — and King Kong was criticized — for that very problem many times. The apes in both films changed sizes. However, there are scenes and situations that become ludicrous if you adhere strictly to the proper scale. In Joe, the ape would not have looked big enough in his normal size to pull a man off a horse and swing him back and forth. Elsewhere, when the drunks feed Joe liquor and he breaks out of his cell, we deliberately made him bigger in proportion to the men to enhance the fright effect. That is the license you take when you're making a drama. After all, you're not doing a documentary on gorillas. You're taking a dramatic situation that you want to enhance. I think it's one of the tools or techniques of filmmaking, and no one really notices outside of those few who see the film over and over again. In King Kong, the ape went



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In The 7th Voyage of Sinbad represented Harryhausen's first venture into color, a factor which necessitated the changing of many effects techniques he had developed over the years. It also represented a shift away from contemporary times and single-character animation to episodic confrontations between human protagonists and a variety of mythological creatures.

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anywhere from twenty-five feet to about a hundred feet in various scenes, depending on the situation. But you're so swept up — or you should be — in the drama, that the situation itself intrigues you, rather than the visual accuracy.

There were three live gorillas who served as models for Joe, including Gargantua at the Chicago Zoo, so Joe was really a conglomeration of the best features of these different gorillas. I designed the armature and Marcel Delgado covered it. It had every joint a real gorilla would have. There were four models about a foot high, and then there was a medium-sized one and a small one. At least one of the skeletons ended up in Europe where everyone thinks it's Kong. But Kong was built on a much bigger scale.



*Harryhausen and Schneer shifted their base of operations to London when *The 3 Worlds of Gulliver* went into production. Unlike most of his previous films, *Gulliver* required only a minimum of stop-motion animation. Most of the effects, which involved adventures among the tiny Lilliputians and giant Brobdingnagians, were accomplished with large and small set pieces, split-screen photography, and sodiumvapor traveling mattes.*



*Jules Verne's sequel to *20,000 Leagues Under the Sea* formed the basis of *Mysterious Island*, a story which concerned the escape by balloon of some Union soldiers from a Confederate prison camp, and their subsequent landing near an island inhabited by huge insects, birds and sea creatures.*

You mention in your book that one of the Joe models seemed to embody the “essence of gorillahood,” as you put it, and that it was easier to manipulate than the other ones. Is this a feeling you try to achieve in making all your creatures come alive in your hands?

I think it is very important that a model stimulates the action. When you’re happy with a model, you use the inspiration that it projects. The baboon in *Sinbad and the Eye of the Tiger*, for example, went through many changes. I had someone sculpt the original baboon for me, and then I changed it because the hands were too big. The shape of the face changed. Every model goes through various changes. You feel it should be a certain way, and until you get it that way you have to go through some pain. Normally, it takes one or two months to produce a model, depending on what’s required. You build them, and if you’re unhappy, you tear them down, remodel and recast, remake the molds. Sometimes a new idea or scene requires reconstructing the model, and you do the best you can — often robbing Peter to pay Paul. You hate to dismember some of your favorite little characters, but there may be no other way. If I recall correctly, the cyclops in *The 7th Voyage of Sinbad* was made into a brontosaurus. I still have some of my old models, but they tend to be the survivors and not necessarily my favorites.

Do you get the feeling that you’re almost literally breathing life into a model that started as clay?

Yes. You start from nothing, actually, and you are creating an object that you hope to convince somebody is alive. That’s why I’ve always been fascinated by movement of any kind — how things shift their weight, move about. That’s fascinated me since the early days of *King Kong*. Any object that moves has to have a front and a back. An object that doesn’t move, like a rock or a tree, is more or less the same all the way around. You think in terms of whether or not something has a living soul because of its physiognomy. Its shape gives it character. Something humanoid would have a much more expressive character than something nonhumanoid. A dinosaur’s repertoire of emotion is much more limited than, say, a baboon’s or a gorilla’s or a *caveman*’s. If you try to put too many human-like things into a lizard, it becomes a cartoon character. So that’s often a difficult problem to resolve in realistic ways.

Does it bother you that stop-motion almost always produces a strobe effect, and that this may be particularly noticeable when the models are of familiar animals?

I don’t think that that would distract the average person from the story, although it would be better to eliminate it, if it didn’t take so much time. We had a pterodactyl in *Gwangi* and the harpies in



Jules Verne’s sequel to 20,000 Leagues Under the Sea formed the basis of Mysterious Island, a story which concerned the escape by balloon of some Union soldiers from a Confederate prison camp, and their subsequent landing near an island inhabited by huge insects, birds and sea creatures.

Jason and the Argonauts, and I didn't worry about the strobing effect. In fact, there wasn't any strobing that I can remember. It all depends on how it's done. If the action gets too fast, you'll have strobing. Who has ever seen a bat fly? It flies in a blur. But when you get into giantism the movement has to match. It has to move in a slower way, or otherwise it doesn't suggest the creature's weight. You can't have a pterodactyl flitting through the sky like a three-inch bat.

I think the problem is in the more familiar animals where you expect the motion to be smoother.

Well, that's true. With a horse, or other common animal, the flesh hangs on the body and moves with it in a way that most people can sense is "correct" without necessarily knowing why. This can be done in stop-motion — with great difficulty, I might add — but I don't think it would sell another ticket. We're not trying to duplicate reality. We're trying to tell a story of a particular period. It's entertainment. I'm criticized many times for having dinosaurs in a picture with humans and other animals that existed millions of years later. I don't think that is a fair criticism when you're making a dramatic picture.

Sometimes even your fans criticize your films for being little more than showcases for your special effects. Isn't this a built-in trap in stop-motion due to the episodic nature of many of your storylines?

Possibly, but I think that can happen in any type of story. Every theme you can think of has been done — every situation. If you took one western, of the thousands that have been made, and said just because a man fell off a horse and was dragged we'll never be able to use that gag again, that would eliminate many sequences in most westerns. With our type of picture, it's very difficult to keep from remaking *King Kong*. We received criticism for *20 Million Miles to Earth*, which was basically the story of *Kong* except that the ymir came from Venus and ended up on top of the Coliseum in Rome. But we had one central character who went through the whole story. In the early days, with the budgets we had, that's all we could afford to do, because it was very costly to build these things. You don't just go out and buy them in a store, so you have to consider their importance to the picture. *It Came from Beneath the Sea* was basically the same structure, as was *The Beast from 20,000 Fathoms*. A nuclear test sets off some sort of buried creature who then wreaks havoc in New York or San Francisco or wherever. Well, you just can't keep remaking those things, so we made *The 7th Voyage of Sinbad*, which had a different structure. It was a structure of fantasy, and I think that may be part of the problem. Fantasy is episodic. Take the basic story of *Jason and the Argonauts*. It doesn't really have strong continuity. Many myths are like that. Sinbad's voyages in the *Arabian Nights* were all episodes. As a filmmaker, you have to string them together with a storyline. We had the same problem even with *Mysterious Island*. We didn't change the original story because we thought we were better writers than Jules Verne. We changed it so the audience could follow the action and continuity. That's what filmmaking is all about.

Our biggest pitfall is how to avoid repeating ourselves from picture to picture. We've made so many fantasies now that every time we make one we narrow the possibilities. We've done flying saucers, prehistoric dinosaurs — how many pictures can you make about dinosaurs? They've been done so many times. Some quite well; others not.

If you compare Jason and the Argonauts to The Golden Voyage of Sinbad or Sinbad and the Eye of the Tiger, to me Jason flows much more smoothly.

Jason lent itself more than most of our stories to a natural flow of instances directly from the original myth. The continuity was with Jason seeking the Golden Fleece, and all the oppositions that he met along the way. Unfortunately, you don't always find that kind of structure in every story you choose.

You seem to like warm colors and atmospheric lighting. In this regard, one reviewer suggested that your ghoulish sequence in Eye of the Tiger was just a rehash of your skeleton swordfight in Jason, but with night lighting, and of course, three models instead of seven.

I couldn't see myself doing thirteen frames a day again.

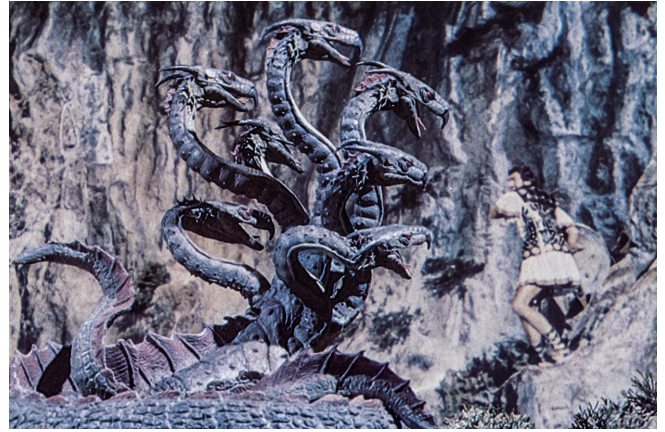
Do you feel that this was what you were trying to do?

Not consciously, no. It took place at night because that's when Sinbad was arriving, and it was a more romantic time to arrive because of the plague situation. It may have been subconscious; I don't know.

One of the ghouls is armed with a torch, and to get that effect you used a torch-wielding stuntman dressed all in black who followed choreographed, timed movements. How do you go about devising gags like that?

That's an interesting question. Every time we start a new picture I have that problem. We've used so many unusual gags and situations that new possibilities are limited. When one designs a sequence, you try to conceive of everything that can be done practically. Some things that would be interesting are not workable for the time and budget we work with. One cannot dwell too long on any individual shot, as there are hundreds of others that require attention. But we do seek variety, like using a torch.

Sometimes people accuse us of rehashing old things. Because we put a horn on the head of the troglodyte, it was said by some that he looked like the cyclops. But he really had no more relation to the cyclops than he did to a unicorn. One reviewer did a Freudian psychoanalysis of why everything we did had horns and a primitive theme. But when you're dealing with a troglodyte, you're dealing with primitivism; when ghouls rise from flames, you're dealing with demonic forces. They all have



Jason and the Argonauts provided Harryhausen with two of his greatest career challenges: Jason's battle with the seven-headed hydra, and the climactic confrontation between three live-action characters and seven skeleton swordsmen. On some of the more complex swordfight shots, Harryhausen was able to average only thirteen frames a day.



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horns. The troglodyte's horn gave him a weapon to use in the fight with the sabertooth tiger. You can analyze things to death, if you try, but it gets a little ludicrous.

How do you decide to use certain gestures and mannerisms to lend character to the models, such as the baboon in Tiger? Do you spend a lot of time planning out moves in an animation sequence?

I usually preplan the broad outlines of the action, but all the intimate little things are spur-of-the-moment. In *Tiger*, I knew I was going to have the baboon-prince look into the mirror, but I didn't know he would shed a tear until I was actually doing it. And when the chess scene came up I knew only that he would play chess. All the other intricate things, like scratching himself and raising his eyebrows, were thought of on the spot. I try not to preplan those things too rigidly for fear of shutting the door on creativity. I never question it — it just comes.

You've said before that animating the seven skeletons which pursue Jason off the cliff was the most difficult sequence you have ever done, but which one has been the most enjoyable?

I enjoy most of them, or I couldn't put my best into them, so I can't really say. I'm very proud of the Medusa work in *Clash of the Titans* because it was such an interesting character. The baboon chess sequence in *Tiger* was very enjoyable because I could put so much character into it. The hydra in *Jason* presented an enjoyable challenge, just trying to get that seven-headed creature to look alive. There was also a pleasure in trying to give Trog humanoid characteristics and idiosyncrasies that were believable.

Do your films usually originate in discussions with your producer, Charles H. Schneer, and how does the series of master sketches that you do tie into such a gestation period?

It doesn't always follow the same pattern. Sometimes I write out a five- or ten-page outline of the story with a resume of each situation I visualize, and then have a writer tie things together with a plot. You see, we start with the visual — although ideas may be discussed first. A lot of times we're criticized for that. But our pictures are essentially visual elements, so that is where we start rather than with a story. *The 7th Voyage of Sinbad* started when I made one sketch of a skeleton going up a spiral staircase. The idea of a living skeleton — not a cartoon — had always fascinated me. "How in the world am I going to use this in a logical way?" I thought. Outside of a dream sequence, the only acceptable way would be to have a sort of *Arabian Nights* fantasy. So I started reading the *Arabian Nights* stories and realized then how lacking in fantasy the other movies on the subject had been. Basically, they were just cops and robbers in baggy pants — Maria Montez being chased over the sand dunes by Basil Rathbone and Joseph Schildkraut. In *Sinbad the Sailor*, they talked about the giant roc and other fantasy elements, but you never saw them. Well, to me, that was neither the *Arabian Nights*, nor was it real filmmaking.

You've done three movies featuring the Sinbad character, all played by different actors. How did you get hooked on Sinbad, and what problems has this created, if any?

Sinbad represents the essence of adventure, and that is why I chose him. We could've had Barbaru. When I started *The Golden Voyage of Sinbad*, I had a hero named Barbaru. But who the hell knows who Barbaru is? And who would care what he did or stood for? But in *Sinbad*, you are dealing with a hero. Our Sinbads are a far cry from the Douglas Fairbanks concept. We've tried different approaches with different types of Sinbads, but it depends really on who you are able to cast. There

aren't that many young actors who can play a role like that today, because the studios aren't grooming them like they used to. It's very hard to find people today who have the charisma and the presence on screen that the older actors had. Errol Flynn, Fairbanks — even Bette Davis and Joan Crawford — all were groomed by the studios. They accumulated a presence that many actors don't have today because they don't have that background and experience.

It's also difficult to find a hero today because in recent times, the hero has become an anti-hero, which borders on being a villain. I think that's a dangerous thing, because you have no one to represent the good force, only the in-between and the evil forces. As far as human frailties go, we don't really have time in our stories to delve too deeply into characterization. We're telling an action story and the pictures are the action. A strong personality would probably help the portrayal of Sinbad, but often the actor you want is not available. You can't drop everything and wait for him. Plus, a lot of big stars object to taking a back seat to special effects. So you don't often have the ideal situation people think you have when you set out to make a picture.

Why are all fantasy films, yours included, given to depicting women as generally helpless creatures, totally dependent upon men?

They're not the heroes. In all these romantic stories, women always play a secondary part. They were not "liberated" then. But some stories require a strong female. Zenobia, in *Eye of the Tiger*, was a mighty powerful force — sort of a female Conrad Veidt. There were many sorceresses in the *Arabian Nights*. We just didn't happen to need one in our previous films.

Trog's entrance in Tiger, when he comes upon the women sunbathing, was the first time you had semi-nudity in one of your pictures. In Clash of the Titans, you went even further. Why is that?

When one has a big investment in a film, people seem to feel that it is necessary, rightly or wrongly, to have certain elements present. It's the type of thing that one lives with, so long as it isn't distasteful or goes to an extreme — then one has to stand one's ground. If it's done in good taste, I see no reason to veto it.

Do you find that even with your track record of attracting audiences that the ability to raise funds for the next Harryhausen film depends largely on the success of the last one?

Possibly. It's very hard to raise money if you're not successful — and everybody can't have constant successes. We had that problem when we made *Gwangi*, which I still think is a good picture for what it was — an entertainment picture for the whole family. I think if it had come out maybe five years earlier, it would've made a big splash; but for some reason, everybody took a dislike to it. They started looking for matte lines, said it was my worst animation — all sorts of negative comments. And it never got a decent release. I still think it's an exciting picture, and anybody who goes into the cinema and sees it, loves it. So I never understood why it got the release it did. The fantasy elements were totally ignored and it was just chucked out onto the market as a western. You can make suggestions to the distributor, but you can't really control your film's distribution. I always felt the best way to exploit *Gwangi* was to start with just the name up on a billboard. You can't associate the word "gwangi" with cowboys — it's an Indian word that refers to reptiles. Later you add "What is Gwangi?" to arouse curiosity. As it was, people didn't know what *Gwangi* was — I think they thought it was a Japanese horror film. A title like that should have been used imaginatively, and it wasn't. The film's lack of success made it very difficult for us to do another such picture, so we tackled

Sinbad again and found that he had a good, durable quality about him. Professionalism, if such a word is appropriate, is being able to compromise without injuring your product. So many projects collapse that you have to learn to play the game quickly, making compromises where you can.



Harryhausen's giant mooncalf being repulsed by the Selenites' electric gun. H.G. Wells' First Men in the Moon provided numerous technical difficulties for the veteran animator, since the decision to shoot the entire film — effects included — in anamorphic format rendered many of his standard compositing techniques unusable.



The Valley of Gwangi, a prehistoric drama set within the framework of a western, was based on a story Willis O'Brien had had in pre-production nearly thirty years before.

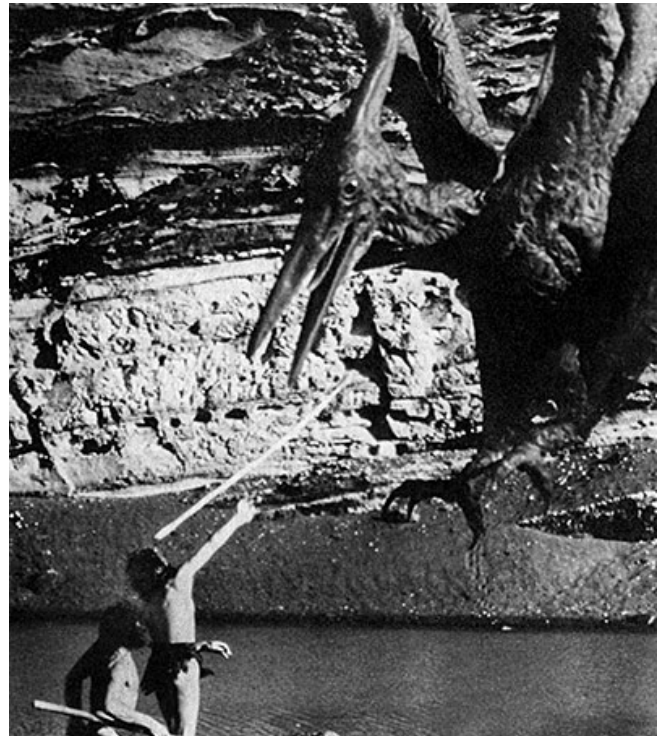
At least you have a growing personal following.

Yes. Up until the last few years, we've stood alone in the field. It's fascinating to see how many people are now interested in stop-motion animation. I'm very happy about that. It shows that pioneers like Willis O'Brien and myself were right in stimulating man's imagination rather than concentrating on the more material, mundane aspects of life. Of course, fantasy is not everybody's cup of tea. You find that quite prominently among the critics — they don't know how to approach it or criticize it. But there's just no way to please everybody. No matter if you made the perfect picture, *somebody* is going to say it stinks. As a filmmaker, you have to please yourself. If you can do that and have a following, great. You're set. If not, then maybe you'd better do some self-examining.

Fantasy is a form of escape, and I won't deny that. But I think we need escape valves. If you don't have them, you're likely to go cuckoo from your everyday worries. That's what Hollywood catered to for years. Then they were condemned for it by the pseudo-intellecks. One thing that contributed to the decline of Hollywood was when they started deglamorizing the stars. I would have preferred to think that Marlene Dietrich never went into the kitchen or did anything mundane — that she had a maid or a robot or something to do all those things for her. I think that added to her illusion — that bigger-than-life character that she portrayed in films. And the studios spent a fortune making and maintaining those kinds of illusions. Hollywood is a city of illusions. That's what it's all about. And to bring it down to the mundane is a shame. Now the products they made back in the Thirties are suddenly being reappreciated. You go out of the theater singing and humming the songs — they make you feel good. It's an illusory world, of course, but I think that that is necessary. There have always been realistic-type pictures — things like *Little Caesar* and *I Was a Fugitive from the Chain Gang* — and there should be. But they shouldn't dominate the screen to the point where you discard everything else as trivial.



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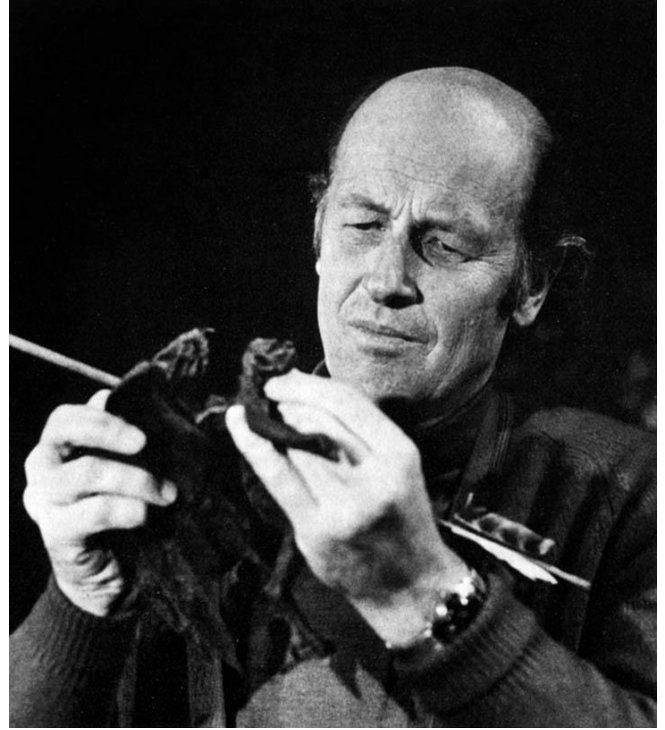
The volcanic island of Lanzarote provided a unique setting for One Million Years B.C., a prehistoric film best remembered for introducing Raquel Welch, but one which also features a fine array of well-crafted creatures.

image

The volcanic island of Lanzarote provided a unique setting for One Million Years B.C., a prehistoric film best remembered for introducing Raquel Welch, but one which also features a fine array of well-crafted creatures.

Everything has positive and negative sides. If you keep feeding the negative, cynical side, you throw off the balance. I've always proposed that you can't have good without evil. It depends on the equilibrium as to which wins. That's why I think the old fairy tales gave the balance to the hero. It is simply good against evil — like in *Star Wars*.

Speaking of Star Wars, you've been characterized as being resistant to the new film technologies, such as motion control, which are beginning to impact on the stop-motion field, particularly at Industrial Light and Magic.



*Ray Harryhausen skewers his homunculus puppet for a sequence in *The Golden Voyage of Sinbad*.*

To me, the ultimate aim in making our films has never been the smoothing out of stop-motion animation. To try to duplicate live-action in every way seems to me like asking a painter to paint a landscape so it will appear like a photograph. Our pictures are more of a surrealistic experience rather than an excursion into technical perfection. I'm certain technical perfection has its place and its advantages, but could you really make a sequence such as the skeleton swordfight in *Jason and the Argonauts*, or the Medusa sequence in *Clash of the Titans*, with a computer?

Imagination and curiosity are obviously very important to fantasy. What are your thoughts on this relationship?

Curiosity has to be stimulated in school to a large extent, but you have to have something within you that starts it off. My generation was raised on fairy tales, but the new concept in school is to throw them out for not being realistic. If it's not practical and workable, then the idea is off in the clouds and has no value. I think recent generations are being deprived by not learning from fairy tales. They stimulate your imagination. That is one reason why we have such a big following among young people — our films stimulate their imaginations, and that is where curiosity starts. Many people have their imaginative curiosity squelched by being told always to be down to earth. And once that is driven from you, often you cannot regain it.

What are the main sources of ideas for your films?

I've been inspired enormously by Gustave Dore, a great Victorian illustrator with a vivid imagination. Other illustrators I have admired are John Martain and Aubrey Beardsley. Ancient archeology is a source of many inspirations. There are many useful books in my library, but one I particularly like is *The Pleasure of Ruins*. I find music a tremendous stimulus. *King Kong* initiated me to the wonderful score by Max Steiner, which fit the picture so well that I started investigating the sources of film music. I found that a great deal comes from opera. *Kong's* score was very



A battle to the death between the cyclopean centaur and the griffin.



*Demon ghouls rise from the flames in the opening moments of *Sinbad and the Eye of the Tiger*,*

Wagnerian, and this film score from my youth led me to a whole new world of classical music. *The Lost World*, as I said before, had certain scenes that made a tremendous impression; and of course I teathed on *Dracula* and *Frankenstein*. It's all an accumulation. Everyone builds their lives on what others have built before them. That's what keeps the snowball rolling.

Harryhausen's fourth foray into the world of ancient mythology.

Do the different characters you animate reflect different aspects of your personality?

Possibly. Mrs. O'Brien says that a lot of OBie came out in Kong's mannerisms. Undoubtedly, a lot of my idiosyncracies — the way I look at things — do come out. I have a rather macabre way of bringing statues to life, and I suppose that dates back to a silent film that frightened me as a child when it showed a gigantic sculpture falling on the sculptor. You could say that I am acting out some things, I suppose, but I don't come home and tear my wife apart after having done a violent swordfight between Kali and Sinbad. Actually, with animation you are acting through another medium. I wanted to be an actor in my early days. I studied drama and was in junior and senior high school plays. But I always had the terrors on opening night, and I couldn't see myself going the rest of my life with lumps constantly forming in my throat. So I found a way to act through animated figures. You have to act and react to the live action; so I have, in essence, found a way to be in acting without actually being an actor.

Clash of the Titans marks the first time you've taken on assistants to do actual animation work. Does this represent a willingness on your part to relinquish some of the total control you have rather jealously guarded all these years?

I suppose, to some extent. But I still have to lay the whole thing out ahead of time — not every little detail, but you have to know what's going to happen in order to shoot continuity for your plates. Otherwise, you won't have the proper reactions of the people. So that's all formulated, more or less, in the storyboard stage — although it isn't quite the same if you don't do the animation yourself. There are certain details that you can't put on paper that come out when you see a character in one pose and then move it to another — little gestures in characters that come out as you work with them.

What does the future hold for Ray Harryhausen?

At the moment, I'm so saturated that I don't even want to think about another picture. I've been working on *Clash of the Titans* for three years and I haven't had enough chance, yet, to renew myself. Usually by the time a picture is over, you're so satiated with it that you're happy it's over. One of your problems is to keep your enthusiasm up over a long period of time, particularly after the live production finishes. The stimulus of keeping on schedule, getting sets built — it's a real circus. Then there's the letdown after you start working alone — or at least more or less alone — in your little animation studio. You have to build your enthusiasm up all over again. What keeps you going, at least from my point of view, during animation is to see in the next day's rushes whether you got what you wanted to put on film. That, to me, is intriguing. When it ceases to be intriguing, I suppose I'd better find something else to do. I've done sixteen feature films now. There are still some projects I would like to do, I think. But some of them are too complicated, and I don't believe I'd even want to

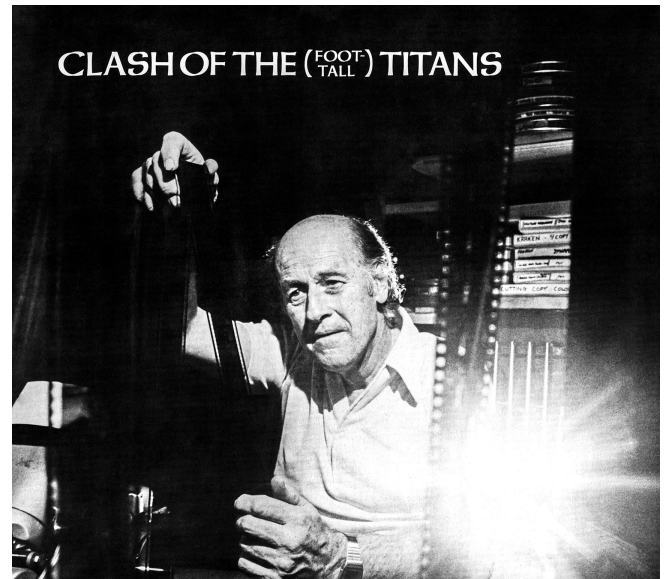
put the time in on them. Then again, I may feel entirely different next month after I've had a vacation.

Vic Cox is a Los Angeles-based free lance writer who plans to include Ray Harryhausen in a book he is preparing on special effects artists in the cinema. Called *Masters of the Make-Believe*, the book will emphasize the imagination and personal creativity of the people responsible for some of the movies' most cherished illusions. Cox, a diversified writer with a special interest in science and motion picture craftsmanship, has been published in a wide range of national periodicals, including *Newsweek*, *Science Digest*, *Boxoffice* and *Omni*.

Ray Harryhausen interview copyright © 1981 by Vic Cox. Photographs from *The Beast from 20,000 Fathoms*, *The Animal World*, *One Million Years B.C.* and *The Valley of Gwangi* reproduced courtesy of Warner Brothers. All other photographs courtesy Columbia Pictures. Special thanks to Mark Wolf.

CLASH OF THE (FOOT-TALL) TITANS

article by Don Shay



With sixteen feature films to his credit, preceded by a number of short subjects, Ray Harryhausen has produced a solid and respectable body of work spanning more than three decades — a prodigious achievement made all the more remarkable by the fact that so much of it was fabricated in darkness and solitude, frame by laborious frame. To his army of devoted followers, a Ray Harryhausen film is a morsel of cinematic fantasy, an event to be celebrated — though perhaps not without a tinge of sadness, for even the most devoted of his acolytes have had occasion to lament the thematic restrictions the stop-motion master and his long-time colleague, producer Charles H. Schneer, seem to have placed upon themselves and their work. Nevertheless, the formula approach to fantasy filmmaking the two have adopted over the years has consistently enabled them to produce a moderately low-budget product with a predictable and dependable margin of profit. And on that basis had been built an enduring relationship with Columbia Pictures. However, when budget estimates for their latest endeavor, *Clash of the Titans*, began soaring to Olympian heights, Columbia decided the film was out of their league and backed out. The project was far from dead however. Two years later, boasting an international all-star cast and a budget that exceeded the sum total of all their previous collaborations combined, the Schneer-Harryhausen co-production of *Clash of the Titans* erupted onto the screen to the accompaniment of one of the most massive advertising, promotion and merchandizing campaigns in Metro-Goldwyn-Mayer's celebrated history. Harryhausen found the prospect both exciting and terrifying.

"It did cost a frightful amount of money," he affirmed, "but I try not to get overly concerned about that. Charles and I approach all our projects with a keen eye toward producing the best possible picture for the least amount of money. We've been doing that for years. This one just happened to develop into a big-budget production — and not necessarily because of the special effects. There *are* more effects in this picture, and we did have more money to spend on them than usual, but not in proportion to the overall budget. A lot of it, naturally, went to pay the big salaries that some of our stars demand, but it's more complicated even than that. Production costs, in general, are outrageous. They seem to double every year. Plus we did location work in four different countries, so the transportation costs were tremendously high. Just budgeting a picture like this can be a very big problem, because money markets fluctuate in each country and sometimes you can go over budget

overnight by a devaluation of the peseta or the lira or whatever. So yes, it was expensive. But it certainly wasn't extravagant."

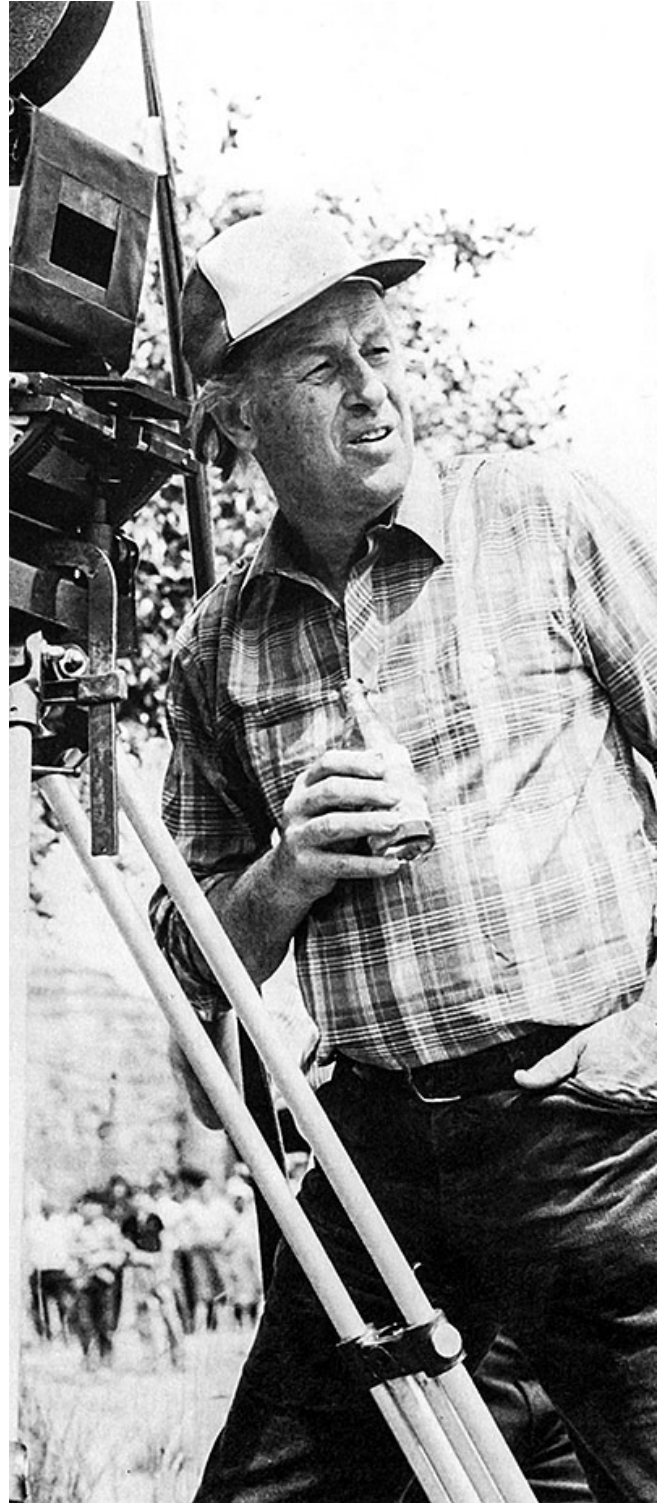
After nearly three years of development and preproduction — initially at Columbia, and then later at M-G-M — principal photography on the \$16 million enactment of the Perseus legend began in May 1979. Director Desmond Davis, whose background in classical period pieces had secured for him the position, had been signed to guide Harry Hamlin and Judi Bowker through their pivotal roles as Perseus and Andromeda, ably abetted by a heavyweight supporting cast which featured Laurence Olivier, Burgess Meredith and a bevy of other stage and screen luminaries. The screenplay was written by Beverley Cross, a classical Greek scholar who had worked with Schneer and Harryhausen previously on *Jason and the Argonauts* and *Sinbad and the Eye of the Tiger*.

"I had always wanted to do the Perseus legend," Harryhausen revealed, "but I never saw a complete picture out of it, because by the very nature of the story, you have to keep adding other elements in order to make it a usable and viable film. You can't just go into a Greek mythology book and take it, per se — which a lot of people seem to resent sometimes. They think we're trying to rewrite Greek mythology, and that's not the point at all. We don't feel we're any better than the ancient Greeks, or Herodotus, or anyone else; but for us, the main thing is to be able to construct a screenplay that will make a very entertaining picture. As a result, we can't always stick absolutely to the letter of Greek mythology. We have to manipulate things in order to get the proper elements to build a suitable story or drama."

Manipulation was significant indeed, since the fantasy elements of the original myth, which involved little beyond Perseus' quest to slay the gorgon Medusa and his subsequent rescue of Andromeda from a sea monster, were considerably too sparse for a typically Harryhausen excursion into mythology. "Beverley Cross was the one who came up with an approach to doing it," Harryhausen continued, "and he developed an outline of a story that Charles and I felt was quite impressive. Of course, there are certain basics that you need for Dynamation, and those have to come out quite early in the treatment, before you get involved too deeply in the details of a screenplay. So I came up with some sketches for the animation sequences, and Beverley incorporated those ideas into his treatment. Then we had many discussions — our so-called 'sweatbox' sessions — where a group of us hash over absolutely everything, so that after months and months of writing and rewriting, we finally have a script that's ready to go."

Location filming was to take the production unit from one end of the Mediterranean to the other. Starting first in Spain, near the remote village of Guadix, the scenes of Perseus capturing Pegasus were staged and recorded. Then the mountainous area around Antequerra was used for the introduction of Bubo, the mechanical owl, and the craggy environs of the cannibalistic Stygian witches. Moving on to southern Italy, the temple of Paestum — one of the last of the ancient Greek temples still largely intact — was transformed into the outer accessway of the gorgon's lair, where Perseus and his comrades encounter the two-headed wolf-dog, Dioskilos. The amphitheater at Ostia Antica, outside Rome, became the sanctum of Perseus' playwright-mentor, Ammon. And the once uncrowded beaches of Palinuro, where much of *Jason and the Argonauts* had been filmed nearly two decades before, were visited again for a variety of oceanfront scenes. Valletta, the walled capital of Malta was used to represent the city of Joppa, and giant rock formations were constructed at the famed tank facilities nearby for the climactic sacrificial ceremony to the sea-dwelling Kraken. The

film crew then returned to England, and the stormy coastline of Cornwall employed for the opening sequence, before retiring to Pinewood Studios where the remaining interior work would be accomplished. As always, Harryhausen scrupulously supervised all the live-action footage which would later be incorporated into his stop-motion sequences.



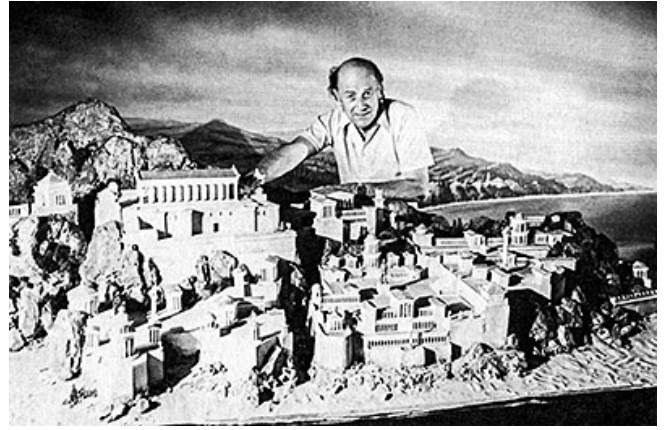
Ray Harryhausen, on location in Spain, supervises live-action photography he will later be incorporating into stop-motion sequences for his sixteenth feature film, Clash of the Titans.

Once principal photography was completed on this, his most effects-laden feature, a full year's worth of postproduction work lay ahead for the acclaimed grandmaster of stop-motion animation. Although the animation for most of his recent films had been produced on cubbyhole stages in some of London's tinier studio facilities, Harryhausen realized that *Clash of the Titans* would definitely need more spacious accommodations. Rearscreen process photography was still to be the major *modus operandi* for the animation work, but bluescreen traveling mattes would be employed in greater abundance than usual, and the called-for tidal wave destruction of the city of Argos would require high-speed photography of large-scale miniatures. As a result, the old special effects stage at Pinewood had been secured on a long-term lease, and was well on its way to being readied even before the film crew left to go on location.

As fully configured, the effects stage was equipped to shoot three setups simultaneously — two rear-projection and one bluescreen. Most of Harryhausen's equipment had been in his personal inventory for years. In fact, tracing the geneology of the Harryhausen hardware is like taking a trip down stop-motion memory lane. Never a strong proponent of the "newer is better" school of filmmaking, Harryhausen steadfastly continues to use his vintage 35mm Mitchell — serial number 15 — as a primary camera. His principal rear-screen process projectors are two of five especially designed and built for *Mighty Joe Young*. Harryhausen bought one of them to do his first solo feature, *The Beast from 20,000 Fathoms*, and picked up the second some years later. A backup unit, still functional and in use primarily on two-projector setups, was purchased from Willis O'Brien's widow after the stop-motion pioneer's death, and dates all the way back to the silent *The Lost World*. One of his primary motor systems was first employed on *King Kong*.

But while the equipment remained the same, the fact that Ray Harryhausen was outfitting his facility to shoot three animation setups simultaneously represented a monumental change for the man who had never before engaged a second animator to assist on his pictures. Harryhausen had recognized, however, fairly early on, that the overwhelming workload for *Clash of the Titans* would require more than his two hands alone could handle. To absorb some of the anticipated overflow, he turned first to Jim Danforth, unquestionably the field's second-most experienced animator, a meticulous craftsman whose stop-motion work included the Oscar-nominated *When Dinosaurs Ruled the Earth*.

"My first contact came in 1978," Danforth recalled, "about Thanksgiving. I was invited down to the Beverly Hills Hotel to meet with Charles Schnee and Ray. We talked a bit about the project, and they loaned me a copy of the script to read and asked me if I would like to come and work on the



The doomed city of Argos was built in small-scale miniature for an introductory long shot. A scenic painting provided an appropriate backdrop, and real water was matted into the foreground.

image

The doomed city of Argos was built in small-scale miniature for an introductory long shot. A scenic painting provided an appropriate backdrop, and real water was matted into the foreground.

picture from the beginning as Ray's assistant. I don't know that they had made a firm commitment in their minds at that time as to whether they really did need somebody or not, but they were sort of exploring the possibilities. I was working on preproduction for *Conan* at the time, and I remember Schneer wanted me to leave *Conan* immediately — this is in November — because they had work for me starting in April. And Ray said: 'Wait a minute, Charles. What's he going to be doing between now and April?' Then they got the notion that maybe I could build some of the models for them, particularly the Pegasus model — actually models, because they wanted two of them in different sizes. Anyway, I took the script home and read it and brought it back the next day. A few days after that I gave Ray a price for building the model horses, and he said it seemed like too much money for him. I told him I thought it was pretty reasonable compared to what other people were charging here, but that maybe he could do better in England. So he left, and when he came back from England a while later he said he had indeed been able to get it done cheaper there; so that was that. As for working on the picture, I think they were originally talking about six months for sure, and possibly longer — as much as a year-and-a-half or so. But I wasn't really in love with the screenplay, and at the time I just didn't really think I wanted to make that kind of a commitment. So I went on to do other things."

Despite the fact that there still existed a small cadre of skilled and semi-skilled animators, any one of whom would probably have killed for the privilege of working with him, Harryhausen next decided on a different approach. Since much of the animation — primarily flying scenes of Bubo against a bluescreen — would require an abundance of patience and enthusiasm, but not a great deal in the way of prior hands-on experience, Harryhausen turned to Steven Archer, a young fan he had met casually three years before, and who at the time had shown him an 8mm film he had done using clay animation and wire-armatured figures. "Personally," Harryhausen remarked, "I've always found working with clay figures terribly difficult, because you leave your fingerprints on them and they change shape on you and all sorts of things. But Steve had managed to do some interesting things, and he seemed to get a lot of character into his figures. As a result, I thought he could probably work with Bubo quite well. Plus he had sort of a puckish sense of humor, which I thought fit nicely with Bubo's personality."

In January 1979, Archer received a telephone call from Dennis Bartlett, supervisor of bluescreen traveling mattes for *Clash of the Titans*, who advised him that Harryhausen was looking for an assistant and suggested the two get together. Archer subsequently showed Harryhausen his more recent animation, and the two discussed the forthcoming project in general terms. No commitments were made at the time, but the two remained in telephone contact over the next several months. Finally, in April, Archer was invited to the studio to shoot a test.

“At the time, they were just preparing the stage,” Archer recalled, “and they hadn’t yet gotten into any of the live-action shooting. I did this test with some of the models from *Sinbad and the Eye of the Tiger* — just the models on a table against a black screen. First I did something with Trog. Ray just told me to use my imagination and do whatever I could with him, so all I had him do was take a step and sort of look around. It was very difficult to concentrate because they had only just started setting things up and people were bringing in equipment and walking in and out and asking me questions about how to get to certain places. It was all very distracting. After Trog, I broke for dinner, and then I did something with the saber-toothed tiger. Then I asked to come in for a second day, because with all the distractions and people coming in and out, I was afraid I hadn’t done very well. On the second day, I had the baboon walk on on all fours and then just sit down and look around. And I did something with the ghoul. I had them all walk, because walking is a rather difficult thing to do in animation — especially when you’ve only been working in plasticene. Most of the characters I had done before either had four legs, or two legs and a tail, so they could balance. Otherwise, unless you have some way of tying it down — which you can’t really do with plasticene — you can’t get a two-legged creature to lift one foot off the ground. That’s why I decided to have them all walking. For me, it was a challenge, and a fairly difficult thing to do.”

Nearly a year would pass before Archer would know for certain whether or not he had been selected as Ray Harryhausen’s assistant. “I kept in contact with Ray during the year, and even though he was encouraging, I was never that sure I’d really be on the film. I guess I’d always kind of thought to myself that if Ray Harryhausen was going to have an assistant it would be somebody like Jim Danforth — not somebody who just animates amateur films.” Though the year dragged on inexorably for young Steve Archer, it was fairly flying by from Ray Harryhausen’s perspective. Getting the Pinewood effects stage fully operational was a continuing project, and certain bluescreen background elements needed to be completed before commencement of principal photography. Janet Stevens,



Larger-scaled sections of Argos — some installed with remote-controlled collapsing devices — were constructed on the backlot at Pinewood. Huge dump tanks disgorged tons of water onto the breakaway miniatures and the resulting devastation was photographed at four times normal speed from two camera positions. Bluescreen traveling mattes, prepared under the supervision of Dennis Bartlett, were used to insert panic-stricken victims into the debacle.



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who had sculpted the majority of the creatures in the last two Sinbad films, had been hired on in like capacity for *Clash of the Titans*, and was busily transforming Harryhausen's design sketches into three-dimensional clay entities. Harryhausen himself devised and constructed the armatures, and did most of the other work associated with producing the finished animation figures. By the time main unit photography wrapped in September, he was ready to transition into the less hectic, but equally stressful, task of producing several hundred special effects cuts in time for the picture's June 1981 release.

The first major effects sequence in the picture involved little in the way of traditional Harryhausen screen magic. A wrathful Zeus, outraged at King Acrisius of Argos for casting his daughter Danae and her infant son Perseus into the sea, directs the sea god Poseidon to unleash the Kraken upon the tyrant and his city. Once freed, the gigantic sea beast proceeds to the waters off Argos where its subsequent thrashing about creates such turbulence that a resulting tidal wave virtually destroys the entire city. The Kraken itself, which was to play a major role in the film's finale, was to be glimpsed only fleetingly in the opening scenes, but the devastation it caused was to be shown in considerable detail.

"We had to devise the destruction of Argos so that no one would get hurt," Harryhausen explained. "We didn't want to go to the extremes they went to in *Noah's Ark* where they built fullsize sets and had them collapse on people. Instead we decided, in order to avoid any disasters with the actors or the extras, to do the whole sequence with high-speed miniatures and traveling mattes. Water shots, of course, are always a problem because if your miniatures are too small, the splashes look too big and that gives away your scale. So the larger you go — within practical limits — the better your effect should be. We built one more or less complete miniature of Argos which we used for long shots with a painted backdrop and then real water matted in front. That was relatively small. Then, for the actual destruction scenes, we built certain sections of the city in much larger scale — about five feet high. I designed the miniatures and supervised the shooting on the back lot at Pinewood; Cliff Culley and his crew did the actual construction. Certain portions, like the temple, had rods and other devices installed to hold them up until they were supposed to collapse; but for the most part, the water did its own work. We constructed the buildings in front of large dump tanks — and when you pour a ton of water down on a miniature, that's about all you need in the way of destruction. We filmed at four times normal speed, usually with two cameras to pick out sections that we wanted to accent. Working with water and high-speed, it's difficult to predict accurately what's going to happen. In fact, you never really know what you've gotten until you see the rushes the next day. Once or twice we had to rebuild and go back for a second take because something didn't break quite properly or part of the set moved, but most of it we got the first time." The human elements, seen fleeing before onrushing waves and falling beneath collapsing buildings, were shot in the studio against blue-backing and then optically composited into the miniature debacle. "We had a lot of bluescreen work on this picture, and ironically we found that we had to send almost all of it to the States to be put together. Originally, one of the reasons we went to England was to use their traveling matte system; but the Rank Laboratories have now closed down their facilities, so we had to go to Hollywood. Frank Van der Veer did most of the composites for us; and for the most part, they're very good. Then, on toward the end, Roy Field joined us in England, and he did some very nice work, as well."

The Kraken shots for the opening sequence were done primarily on location using a large-scale miniature and high-speed photography. “The big Kraken was about fifteen feet long,” Harryhausen revealed, “Colin Arthur modeled it in his living room, and it was so enormous that it went right on through into the dining room. When he got it just right, he cast it in sponge rubber, and that’s what we used on location. The problem, of course, with rubber is making it sink, so we had to load it with lead ballast. We built an underwater set in a place called Comino Bay, which is on a little island between Gozo and Malta. The set had a big iron gate designed to keep the Kraken from emerging unless summoned, and when Poseidon raised the gate we’d tow this Fifteen-foot monstrosity out through the set. Egil Woxholt shot most of our underwater material. He specializes in underwater and aerial photography, and he did a lot of work for us on *Mysterious Island*. The whole arrangement presented numerous problems, but one of the more unexpected ones occurred one time when we left the Kraken out in the bay overnight on the rocks, thinking nobody would bother with it. Well, it was still there the next morning, but all the lead had disappeared. Lead, apparently, is very dear over there, and someone had filched it during the night. So we had to reballast it. We also tried some shots with a skindiver in a Kraken suit, but those didn’t work out. He couldn’t seem to control himself very well with all the weight he had on his head, plus the fact that he had to have a snorkel on and a scuba tank. The whole idea had been to get some more movement into the creature, but in actuality, his movements were quite limited. So although some of that footage was included in our first trailer, there’s none of it in the film itself.”

Curiously enough, the first stop-motion sequence in the film concerns not one of Ray Harryhausen’s mythological creatures, but rather a giant vulture which mysteriously appears outside the bedchamber of the princess Andromeda and lures her astral image into a golden cage which the gird then carries off into the night. “We already had quite a few fanciful creatures built into the script,” Harryhausen commented, “and we didn’t want to risk losing our audience totally. Sometimes you can have too much pure fantasy. So we decided to put in a few things like the vulture, and later on the scorpions, that *everybody* could identify with.” Beverley Cross first conceived of the flying emissary as being a huge bat or marsh hawk, but the concept gradually evolved into that of a vulture because of its generally repellent reputation and evil mien. A beautifully crafted miniature covered with crow feathers, the great bird stood about a foot tall with a wingspread nearly twice that size.

Determined to pursue the vulture on its next nocturnal visit, Perseus enlists the aid of a wise old playwright, Ammon, and sets out to the Wells of the Moon to capture Pegasus, the sole survivor of a once-vast herd of flying horses. “Pegasus represents one of those things where we didn’t stick absolutely to the letter of Greek legend,” said Harryhausen. “In mythology, Pegasus actually springs from the blood of Medusa’s head after it’s been removed. Of course, if we’d done that, Pegasus wouldn’t have come into the story until almost the end. So we manipulated the whole concept a bit to get the proper elements we felt we needed for a suitable drama.”

The live-action plates for the capturing sequence were shot day-for-night at the Guadix location. Wearing a helmet of invisibility given to him by the goddess Athene, Perseus manages to get close enough to Pegasus' watering hole to toss a rope around his neck. During the subsequent struggle to subdue the winged stallion, Perseus' helmet is shaken from his head and he reappears. Together with Ammon, Perseus manages to restrain the horse long enough to leap onto its back. Although a live horse was used for head and feet closeups, much of the action involved Harry Hamlin and Burgess Meredith interacting with nothing at all. The rope used on location was attached to a thin wire which was then affixed to a tower sitting out of camera range. When photographed against the sky, the wire disappeared, leaving Perseus holding a rope which appeared to end in mid-air. This, then, provided an ideal background plate against which Ray Harryhausen could later animate his flying horse and a carefully aligned miniature rope. Pegasus' capture was the first animation sequence completed by Harryhausen. The subsequent aerial contest between the wild stallion and his determined rider was to be shot later using bluescreen traveling mattes since a playing area much larger than the rear-projection screen would be required to contain the action.

Once Pegasus has been tamed, Perseus awaits the giant vulture's next astral abduction of the sleeping princess. Then, astride the flying steed, he follows the bird to the vast, mistshrouded marsh lair of Calibos, a half-human, half-animal victim of Zeus' petulant wrath whose once-normal body had been hideously transformed earlier in the picture via cleverly executed cel animation of shadow images.

"When we first conceived of Calibos," said Harryhausen, "I wanted him to be a completely animated character. After all, it's tough to find an actor with a cloven hoof and a violently wagging tail, and we didn't want him to look like a man in a suit — sort of like the first *One Million B.C.* where they



A fully-detailed model vulture with a two-foot wingspan was constructed for closeups and medium shots. Distant flying scenes employed bluescreen traveling mattes and a smaller, all-rubber bird with only a nine-inch wingspan.



The roping sequence combined live-action photography of actor Harry Hamlin and stop-motion photography of Pegasus.



tried to squash a man into a dinosaur suit. Also, we didn't want him dragging a tail around that we'd have to work with wires like the lion in *The Wizard of Oz*. So we decided to make Calibos completely inhuman, and that's one of the reasons we gave him one human leg and one goat leg — which maybe people will notice, and maybe not — but at least it

Background plates for the sequence were shot day-for-night on location. The rope was attached to a thin wire which disappeared when photographed against the sky, making it a relatively simple matter for Harryhausen to align a miniature wire rope to the actual one being held by the live performers.

made him look like something besides a man running around with a tail glued on his back. The original idea was that he was going to be mute, but then complications arose and he had to have dialog. One can, of course, make dialog with animated figures, but it never looks quite convincing. It's fine for puppets and that type of subject matter, but if you're trying to imitate human speech in a realistic manner, you simply cannot do it to the perfection that nature has devised. So we decided to use a man in a mask. We found an actor, Neil McCarthy, who had a good basic face structure for our purposes, and then Colin Arthur, who had done a number of things for us in the past, did the rest with makeup appliances. We used Neil for all the dialog and the chest-high closeups. Then, for the fullfigure shots, we used animation. Calibos is a major character in the film, and I think the live footage intercuts quite convincingly with the animation, particularly in the swamp when we had him wrestling very closely and intimately with Harry Hamlin."

The wrestling scenes between Perseus and Calibos represent one of the high points in the film's animation. A more traditional approach to such a sequence would have been to cut between closeups of the two struggling actors and long shots of the puppet Calibos interacting with a puppet version of Perseus. However, in this as well as a later confrontation, Harryhausen employed numerous medium shots of the animation puppet in close combat with the live actor, an effect that required well-choreographed plate photography and extremely precise alignment of the puppet during animation.

"We built two Calibos figures," Harryhausen continued. "The main one was built around the Trog armature from our last picture. Calibos was so close in form that I saw no reason to sweat blood building another armature when I already had one. Then we used a second, smaller one for the long shots with Pegasus, since the bigger Calibos wasn't in proportion to the horse." Calibos needed to interact closely with Pegasus for a sequence in which the marsh lord, intent upon thwarting Perseus' quest for the gorgon's head, ambushes the unsuspecting stallion. In an all-animated variation of the earlier roping sequence, Calibos lassoes Pegasus, and then after a brief solo battle is joined by his live-action rear-projected minions who throw a net over the struggling steed and drag him off into the swamps. Calibos finally meets his death near the end of the film, but only after unleashing upon Perseus and his comrades a trio of giant scorpions. "The scorpions, we felt, were appropriate to come out of Medusa's blood, along with a few maggots to make it as repulsive and repellant as possible. We built three animatable scorpions — each about a foot-and-a-half long — and had them battling three men. To get a good idea of how scorpions are supposed to move around, we brought some live ones in and photographed them. But they're very untalented, I'm sorry to say. Either the lights made them languid and they'd just sit there, or else they'd move around but they wouldn't do what you wanted them to. So on the scorpion sequence I ended up having to use my imagination, I would say, eighty percent of the time. Most of that sequence I

finished up during the early months of animation — when I was still working alone. Generally, I like to get into a particular sequence and stick with it until it's finished, but on this picture I jumped around a bit at the beginning and did a few shots using each of the characters, just to get a kind of visual resume of the picture as we were cutting it. Then I'd go back and fill in each sequence.'

By early March, Harryhausen had finished most of the Pegasus roping scenes, a good deal of the Calibos footage, and nearly all of the scorpion and vulture shots. He decided then that it was time to hire on an additional pair of hands to commence work on the numerous flying shots that would be filmed against blue-backing and then optically composited into a variety of background plates. Steven Archer was called in to fill the bill.



Scenes of hand-to-hand combat between Perseus and Calibos necessitated some of Harryhausen's most complex interactive animation.

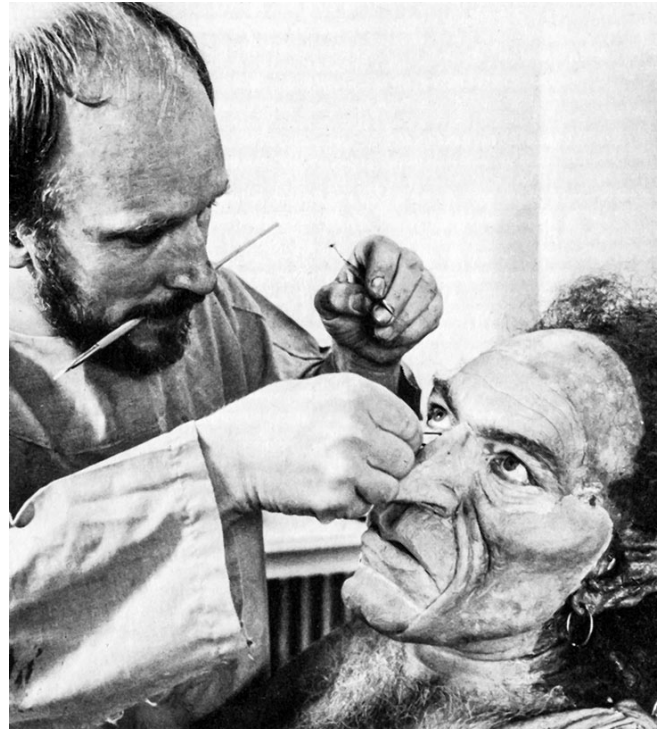


Careful alignment of the foreground puppet figure with the rear-screen live-action footage was required for a shot in which Calibos lashes out at Perseus with his whip, catching him around the neck and pulling him down.



Since the script required Calibos to speak, actor Neil McCarthy was hired to impersonate the Harryhausen puppet in closeups. Longer shots were accomplished solely with the animation figure.

“For the first week, we were still waiting for the camera,” said Archer, “so I spent most of that time watching Ray animate Calibos and just sort of generally soaking up the atmosphere. Once they got the camera in, the first thing I did was a test of Bubo against the blue-backing, just to check the exposure and also get used to working with the owl. Actually, there were three of them. The largest one was full-size and it was virtually identical in appearance to the remote-controlled one they used on location. The body was fiberglass covered with brass feathers, and working with it was like handling a porcupine. The legs were metal, but the wings were just rubber painted to look bronze. You could move the wings and the feet and the head, and we used it mainly for closeups. Most of the flying scenes were done with a smaller one — about four inches tall, made out of rubber — and we had a lot of scenes of him flying back and forth, or zooming out into the distance. Then later on, there was a very, very small one — only about an inch tall — that was used for a few scenes. We used an overhead flying mechanism for the flying shots. It was very precisely machined and it ran along a wood track overhead. Three main wires ran from the mechanism itself to the puppet, and then we usually ran another wire from the bottom of the owl to a paper cup filled with sand, just to stabilize the movement. It was kind of like working with a string puppet, only with a lot more control. For the most part, I didn’t use surface gauges when I was animating the flying shots. Instead, I marked off the wooden track in quarter-inches, or smaller depending on how fast Bubo was supposed to be moving, and then I just moved the mechanism down the track in increments. The first shot I actually got to do was in the sequence where you first meet Bubo. After some conversation, he leaves the tree, does a slight curve, and then zooms off into the distance. On the first take I didn’t get it quite right. On the second, I was almost finished with the shot when the camera went berserk and started photographing me while I was changing the



Colin Arthur employed a combination of foam rubber appliances and theatrical makeup to transform McCarthy into the vengeful lord of the marsh.



Another carefully aligned rear-screen composite involved the puppet Calibos grappling with one of Perseus’ comrades — eventually getting him into a fatal choke hold.

position on the puppet. So in the rushes you got to see me on every other frame. The third time, fortunately, everything came out all right.”

“I didn’t really get into much in the way of a training program with Steve,” Harryhausen admitted. “Everything was laid out in storyboard form, and I’d go over each shot very carefully with him and tell him what I wanted. Then he’d pretty much take it step by step and animate it on his own. He had to take several cracks at some things — as I expected he would — but he learned very quickly and never got discouraged.”

“Most of the shots I was able to finish in one day,” said Archer, “but some of them took longer, for one reason or another. Sometimes Bubo would have to be very, very small on the screen, and also high up, so I’d have to take this ladder that was taller than me, move it into the scene, climb up to the top, grab the overhead mechanism, move it maybe a quarter of an inch, climb down, pull the ladder out of the way, walk about fifteen feet to the camera, photograph it, and then go back and do it all over again. Needless to say, those shots took a long time. Then there were times when the wires broke. I was doing the shot of Bubo when he lands on a branch and starts to fall backwards, and then the branch breaks and he lands on his head. The first time I did that shot, the wires kept breaking. The model was very heavy, for one thing, and then the wires kept getting caught in his feathers and breaking, because as he goes upside-down the wires had to be changed around — otherwise the branch would block them. For the changeovers, I’d used three surface gauges to mark his final position before the switch. Then I’d gently put the model down on a stand, move the wires around the branch, and reconnect them. The wires we were using on that puppet were actually pretty thick compared to the nylon monofilament fishing line we were using on the smaller ones, but for some reason they kept snapping — which was very frustrating. If the surface gauges happened to be in place, then you could just repair the wire and continue on. If they weren’t, you could take a chance and go on, but more often than not, the shot would be spoiled. Basically, if a wire broke halfway through a shot, you’d have to start over again. Anyway, I did Bubo on the blue-backing for about a month or so, and then after that, I did about a week on the small model of the giant vulture. Ray had already done some flying shots of the vulture using the big puppet, but I did all the shots where he’s flying way out in the distance — mostly in the sequence where he’s being chased by Pegasus. Those were done with a much smaller model that was all rubber and had about a nine-inch wingspan. Some of that footage was a little tricky, because one wing on that model was a bit shorter than the other and so the balance wasn’t quite right.”

While Steve Archer continued to busy himself turning out bluescreen flying elements of Bubo and the vulture, Harryhausen shifted into the Medusa sequence, one of his career masterworks — innovative, atmospheric, suspenseful — a stunning amalgam of images that virtually transcends the stop-motion medium. The gorgon first appears as a flickering shadow cast upon the wall — a sinister apparition within a dark milieu of tension and mystery that Harryhausen projects and sustains throughout as Medusa slithers ominously through her torch-lit sanctuary in search of new prey to join the silent stone remnants of previous intruders. “We had many long discussions about the fact that we wanted the Medusa sequence to be as dramatic and moody as possible,” said Harryhausen. “And of course, we had to coordinate with the director and the photographer to make sure everything was uniform throughout. We finally came up with an approach that relied heavily on what I call ‘Joan Crawford’ lighting — which is not to imply that Joan Crawford was in any way a gorgon, but if you look back at some of her old films, particularly *Mildred Pierce* and some of the other Warner Brothers pictures, you’ll see a similarity in the way they used to light her so that she moved in and out of shadows or maybe had just a light across her eyes. It’s rather dramatic, and I felt the same sort of thing would be quite effective for Medusa.”

As with many of Harryhausen’s previous mythological creations the gorgon’s appearance is both striking and unconventional “Actually, where mythological creatures are concerned,” Harryhausen remarked, “there really is no standard for what they ought to look like. We try to go back through history and find out what artists had done in the past; but the main thing as far as we’re concerned, is that our creatures must be functional for the film. Everything else is secondary. We found there were many renditions of Medusa — anywhere from someone who looks like a middle-age housewife, to a beautiful woman who just happens to have snakes in her hair. It seemed to me that the severed head of a very attractive-looking woman with snakes wiggling around on it would hardly be sufficient to turn anybody into stone. For that reason we felt we had to design Medusa to be more frightening. So I came up with a snake-woman tail and body, plus a more hideous face, with undertones that she may have once been beautiful. This may not correspond to most historical depictions of Medusa, but we felt strongly that it would be much more believable that Medusa could turn someone to stone with an ugly face than with a beautiful face. I suppose one could debate that point, but to us it seemed logical. Giving her a serpent body seemed in keeping with Aphrodite’s



*Calibos meets his death. Because of basic structural similarities, the primary Calibos model was built around the troglodyte armature from *Sinbad and the Eye of the Tiger*. A second, smaller version was scaled to the size of the main Pegasus model for the sequence in which Calibos and his minions capture the flying stallion.*

turning her hair into snakes, but there were practical reasons as well. Frankly, to do otherwise would have created a big animation problem. If she had human legs and some kind of flowing gown, it would have been almost impossible to animate. In the final analysis, we look upon these creatures as entities — as actors. Medusa is an actress in this picture, and she plays opposite Harry Hamlin. So we tried to get the very best out of her, and this representation seemed to be the most logical and suitable.”

Harryhausen’s initial concept called for a topless figure, but the studio expressed concern that bared female breasts — even on a fancifully-conceived puppet — might earn the picture an X-rating in England. To ameliorate the situation, some tests were done with Medusa demurely covered in a bra-like garment, which Harryhausen thought looked simply vulgar. Ultimately, the bra was removed and Medusa’s potentially offending nipples were painted over to blend in with the rest of her upper torso.

The number of snakes in Medusa’s hair was also a matter of some debate before an optimum compromise was made between aesthetics and practicality. “The fewer snakes you have, obviously, the less complicated everything becomes. But the main thing is to have the figure look good. You don’t want to hamper the appearance by cutting back too much. After all, who wants a gorgon that’s skimpy on snakes? Twelve seemed to be about right, so that’s what we used. We did, however, give our Kraken three fingers — and for the same reason that Mickey Mouse has only three. It helps save time in animation. Every move you make takes time, and time becomes particularly critical when you’re getting near the end of a production and everybody’s putting the pressure on you to finish up quickly. It took me quite a few months to do all the Medusa animation. It wasn’t quite as bad as the skeleton swordfight in *Jason* where I averaged only about thirteen frames a day; but for a single character, it was pretty complex, because I had to keep the snakes always in motion and give Medusa movement that would be suitable to her body structure. Since the head had twelve snakes on it, that’s actually twenty-four moves to keep track of, since the heads and the tails of the snakes are all moving around together. Plus the mouth was mobile, as were the eyes. And of course the arms have to move, and there’s another snake wrapped around one arm. On top of that, we gave her a bow and arrow so that she wouldn’t be standing around like Zasu Pitts, with nothing to do with her hands. That in itself involved a lot of effort, since every time she shot an arrow it had to be put on a wire. Then we had the tail, with a rattle on the end like a rattlesnake to give some warning when she’s mad. So all together, it was a pretty slow process.”

While Harryhausen continued with the Medusa sequence, Archer finished up the bulk of the bluescreen footage and began transitioning into rear-screen process work. “The first shot I did was fairly simple, since it just had Bubo against a sky background. The second one was in the sequence where he’s trying to free Pegasus from the cage and he opens the lock with his beak. The background footage showed the cage and the horse’s feet and some flames, and then midway through the shot, the lock drops open and the door springs up. I had to maneuver Bubo in there and have him appear to pick the lock. That was the first time I’d ever had to synchronize a model to action that was happening on the rear screen.” Although Archer was to go on and do isolated shots in the Calibos, Dioskilos and Kraken sequences, he retained a special affinity for Bubo. “Out of all the characters I worked on, that was really the only one where I actually got to do *most* of it. And I think Bubo was an interesting challenge. You are, after all, a bit limited in what you can do with an

owl — any owl for that matter, but particularly a robot owl — because he can't shrug his shoulders, he can't raise his eyebrows, he can't make any kind of expression except to either open his eyes or move his head around. So I tried to get character into him in other ways. His eyelids slid in and out so you could have them half-closed or wide open, and his eyes went around. I also had him blink a lot. There's one scene where he's been knocked into the river by Calibos, and he comes out coughing and sputtering and sort of bends over and shakes his head as if to get the water out. Then, when Harry Hamlin asks if he can fly, Bubo looks at one wing and kind of gives it a little flap and then he does the same to the other, and then turns and nods. That little bit was my idea, and I was very pleased with how it came out. Another shot had Bubo diving at the vulture in Calibos' lair, and Ray asked me if I could make him look angry. So I did this kind of closeup shot where Bubo hauls up and his claws flex a bit, and Ray quite liked that shot."

As the summer months slipped away and the postproduction schedule got progressively tighter, several major sequences remained still largely untouched. In August, however, Charles Schneeer received a call from Jim Danforth, who had only recently severed relations with the producers of *Caveman*, after months of effects design and preproduction on the offbeat prehistoric comedy. "My involvement with *Caveman* was to have been a long-term thing," Danforth explained, "and that, of course, came to a sudden end. So I decided to give Schneeer a call and see if there was anything that still needed doing on *Clash of the Titans*; and he said he'd have to check with Ray. He called me back a while later and said, 'I have spoken with Ray, and he would be pleased to have you come over and do the animation on the flying scenes of Pegasus.' And I said, 'Wonderful!' Initially, there was some concern as to whether they could get a work permit and get all the legal and political clearances — but they did."



Steven Archer animated a majority of the shots featuring Bubo, the mechanical owl, many of which were flying scenes filmed against blue-backing for later optical compositing. Harryhausen had never before hired an assistant to do animation work.

Danforth booked a flight for London and arrived at Pinewood Studios in early September. As with Bubo and the vulture, most of the Pegasus flying scenes were slated to be shot against a bluescreen for later optical compositing with appropriate background elements. However, unlike most Dynamation flying sequences, which rely largely on overhead wire rigs for suspending models in the air, Harryhausen had elected to adopt a rigid rod mount. "I was afraid to use wires for Pegasus," he said. "For one thing, it was so much heavier than the other flying puppets. And then I figured we needed a more certain way of registration to make sure we could get a realistic effect — particularly for the gallop. So we came up with this kind of pogo stick device that attached to the horse and held him up in the air against the blue-backing. I've used similar devices before, but nothing as elaborate as this. It had an up-and-down mechanism, a revolving mechanism, and a cross-screen mechanism, and it was geared so you could do small, very steady moves."

"The mounting shaft came up from below," Danforth elaborated, "and attached to the left side of the smaller horse. So we always had to film him flying from left to right. Those scenes in which he's flying the opposite direction were reversed optically. The up-and-down motion of the shaft was done manually. You'd release a little lock, and then just move it up or down. I put a piece of adhesive tape down the back with marks on it and then I'd just raise it to the next mark or lower it, and lock it off again. On top of that, right where the shaft connected to the horse, there were three swivels in different planes, so you could basically get all the action you wanted — up and down, left and right, and rotation. The linear movement was achieved by mounting the shaft rig on a track Ray had borrowed from one of the other effects riggers at the studio. The track was about five feet long, and the whole system worked very nicely. The only problem was that in some of the scenes the horse had to travel about ten feet, which of course was hundreds of feet in his size. So that meant I had to animate him going from one end of the track to the other, stop and put a lot of pointer gauges on different parts of the horse, and then slide the whole track down. Of course, the pointers had to be arranged so the horse and the track could be slid past without touching any of them. So now the track is slid down to where the beginning end



The larger of the two flying horse models was used for the sequence in which Pegasus, freed from his cage by Bubo, makes an escape through the burning swamp lair.



Calibos' flying emissary ducks to avoid an aerial onslaught by Bubo. The Harryhausen vulture footage, filmed against a rear-screen, was used as a background plate for the bluescreen insertion of the attacking owl.

was where the stopping end had been, and then we had to crank the horse back. It was a worm gear device with very tiny threads, and there was no quick-release mechanism, so it took about twenty minutes to crank the horse back along the track and then use the pointer gauges to try and reposition him exactly where he had been in the last frame. Then you'd make your next move from there and go on. There's one scene in the film — and unfortunately, it's the first scene where you see Pegasus — and it's a wonderful little atmospheric moment when Perseus and Ammon have come to the magical Wells of the Moon, and they look up in the moonlight and see Pegasus coming down. Of course, it needs to be absolutely smooth and flawless; and it is, except that right in the middle of the shot, just as he comes out from behind a tree, we hit that mid-track point and there's a little 'pop,' and then he goes on and he's fine after that. If I'd known exactly how the shot was going to be composited, I probably could have slipped it in when he disappeared behind the tree and it never would have been noticed. But since it was bluescreen, I couldn't really tell. Bluescreen did have some definite advantages, though. Since we had three different flying sequences and a lot of animation shots, we were able to use some of the animation over again with different backgrounds, which helped increase our output.

"The rod mount was made to drop out photographically by a rather ingenious system that Ray worked out with Dennis Bartlett — something I think was originally devised for *Superman*, or a variation of that — using a V-shaped or pyramid wedge mirror on the post that reflected the bluescreen. It came to a knife edge that pointed toward the camera so you couldn't see it. The bluescreen was wider than necessary for any given shot, which was sort of the essence of making the system work, and sometimes you had to angle the mirrored wedge as it went across the frame to make sure you were still getting the blue. But it worked — very well, in fact."

How does a flying horse fly? "I experimented with several different techniques before Jim came onto the picture," said Harryhausen. "There were all kinds of possibilities. We could have done something like they had in *Fantasia* where they had all these stylized horses doing exciting designs in the sky, but we didn't want to do that because we were after a more realistic effect. I did several tests, though, where I posed the horse's legs gracefully as he flew along, but nothing seemed to look too impressive until we got into the realm of the gallop, which I think Jim did exceptionally well. Treading the air just seemed to be the ideal way to give the effect that the horse was flying. Somehow you feel he *should* be doing that, even though there's nothing underfoot. Maybe it's a hangover from *The Thief of Bagdad* where they used a real horse running on a ramp and then matted the ramp out. But in any event, that seemed the most satisfying way to go."

"Ray was very permissive with me," Danforth related. "Maybe a little too permissive at times. I'd ask him about how he wanted something done, and he's just say, 'Well, whatever seems right to you.' I suppose, in a way, that's a nice vote of confidence, but I quite often found myself wishing he would give me more guidance, because I was never really sure that I was giving him exactly what he wanted. For example, Ray never showed me the flying tests he had done. He showed me the scenes he had completed of the horse on the ground, but that's all. I guess he did kind of indicate to me that he thought it looked better if the legs moved, but it wasn't as though he said: 'I've tried it four different ways and I like the third way best, so that's how we're going to do it.' He really left it pretty much up to me. Anyway, I took the approach he did that even though a flying horse probably wouldn't need to use its legs, it just looked better to me if he was doing sort of a slow-motion rotary

gallop as he was flying — just to keep everything moving. The other extreme — and of course there are all sorts of variations in between that are possible — but the other extreme would have been to simply tuck his front legs up under him and sort of trail his back legs behind, and then just flap his wings as hard as was required for whatever speed of flight you wanted. I suppose then you'd know for certain that you were really looking at a flying horse and not some real horse running on a treadmill somewhere. But the slow gallop seemed to have the nicest effect. Some of the shots work better than others. The first scene I actually animated — which was not the first scene in the film, though — was just plain bad. I didn't give enough weight to the horse. I was trying to give him some up-and-down motion, in addition to everything else that was going on, as though there was some reaction to the flap of the wings. As the wings went down, I would try to raise the body a little bit; and then as the wings were on the upstroke, I'd let the body sink just a little — as would probably happen. But I overdid it on the first scene that I tried, and so you get the feeling that the horse has no mass. It's reacting much too much to the wings, and it looks like he's a butterfly going along. That particular shot, unfortunately, is still in the picture — along with two or three others that also make me uncomfortable — but for the most part, the stuff is pretty good. There are some shots where the horse is going along and the background's moving and you really get the feeling that you're seeing something happening.



The partially completed Medusa model, as sculpted in clay by Janet Stevens.

“We also had a little miniature Perseus that I think Ray sculpted himself. It was about seven inches tall, and did everything a little person should be able to do — joints everywhere. We used him in a lot of the flying scenes, of course, but you never really get a clear look at him — which is good. I tried to do just enough with him so it looked like he was alive, but not so much that it would call attention to him. Mostly I just tried to make sure that he kept his center of gravity right, and as the horse leaned he would try to stay in the vertical the way you do when you’re actually riding. There’s a couple of bucking shots where he brings his hand up like a western rider, but nothing really intrusive. We built a bigger Perseus, too. I sculpted that one to go with the bigger horse, because there was a plan to do a shot in which Pegasus flies right into the camera in kind of one of those galloping shots where the horse goes right over the lens. Anyway, that was the idea. But we tried it on wires and it just didn’t work. It was not stable, and the horse was chattering all over the place. It could have been improved, but Ray looked at it and said: ‘We don’t need the shot that badly anyway. Let’s just give it up.’ So we did. There are a couple of others that were done on wires, though. There was one shot just after Perseus has tamed Pegasus, and he’s going to bring him back to land again and they go into an arc against the night sky. That was done on wires because, of course, we couldn’t make the horse go in curves on the straight track. We did the same thing for another shot at the end of the film where Pegasus shoots up out of the ocean and goes flying across the sky. Then, at the top of his arc, he kind of pulls his legs up for a moment, whinnies, and goes on, as though he’s really floating and flying. Unfortunately, I guess they had quite a bad matte line on that shot, so it was trimmed back to just a short cut. Anyway, those were the only two wire shots, and those were done on sort of a big boom arm. We took a two-by-four and put a bolt through it, so it would have a pivot point, and then out at the end we put one of Ray’s standard flying mechanisms. He has two very nice ones that are all



With twelve slithering snakes in her hair — plus a multitude of other moving parts — Medusa presented Harryhausen with his most demanding animation challenge on the film. Low-key lighting was used throughout the sequence to heighten atmosphere.

image

Ray Harryhausen with his # 15 Mitchell.

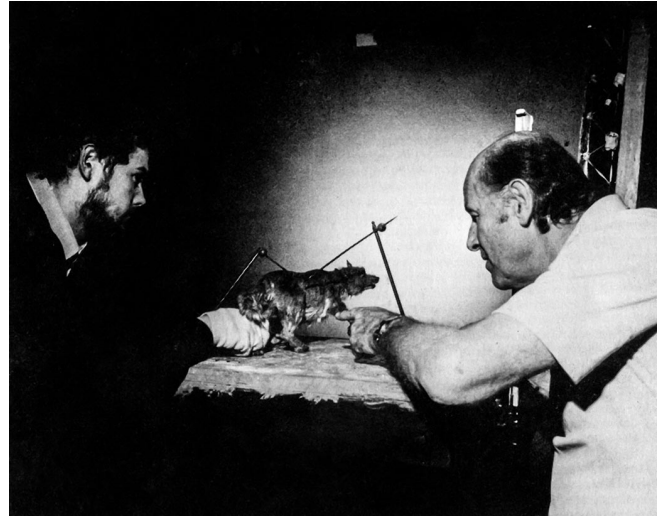


Medusa sends a smoking arrow streaking toward one of her intruders. Such shots required mounting the miniature arrows on ultrafine wires.

image

gear-driven and have motion on all different axes, and he can shorten and lengthen the wires by turning little spools.”

Wires were also used for the decapitation scene. When Perseus’ sword (on the background plate) reached the proper point, Harryhausen removed the gorgon’s head with a razor blade, disassembled the neck armature, and attached the severed head to an aerial wire rig.



Steven Archer produced the first few shots in the Dioskilos sequence, but an injury prevented him from continuing on. Most of the dog animation was completed by Jim Danforth, who joined Harryhausen’s small effects unit during the final months of postproduction.



At Danforth’s suggestion, the sequence was modified so that Perseus could kill one of the dog’s heads while the other kept on fighting.



Danforth's major tasking on the film was the production of all the bluescreen flying shots of Pegasus.



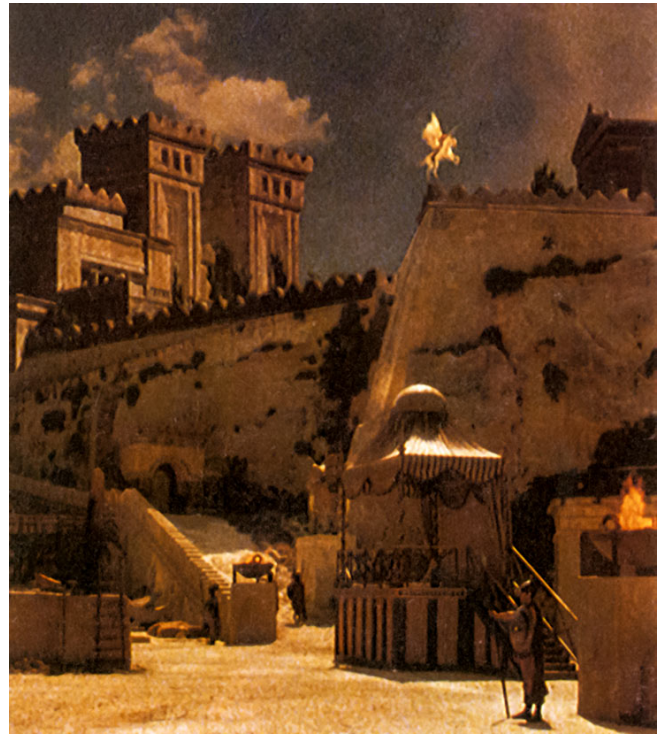
The smaller Pegasus model, equipped with pigeon wings, was used for the flying scenes.

The full-figure flying shots of Pegasus were intercut with closeups of Perseus astride the mythical creature. Most of these were three-element bluescreen shots combining live-action photography of Harry Hamlin, real sky backgrounds, and glimpses of the horse's wings as they moved up and down.

"These were done with wings that were not actually on either of the two horse models," said Danforth, "but rather with a big set of duck's wings which had been treated first by a taxidermist and then outfitted with armatures and attached to a board. Then we'd animate them from different angles and at different tempos so the wing tips would always be going up and down behind Perseus to keep the rhythm of the sequence going."

Once Jim Danforth had finished the bulk of the Pegasus flying shots, he transitioned into the Dioskilos sequence. "Dioskilos was based largely on Cerberus, the guardian of Hell in *Dante's Inferno*," explained Harryhausen. "Cerberus, of course, had three heads, but with three heads we felt the dog would have become so bulky — especially through the shoulders — that it would be unbelievable. Therefore, we felt two heads would be quite sufficient. The main problem with Dioskilos was the fur. I forget exactly what type of fur it was now — some kind of Siberian rabbit, I believe — but it was very exotic. Whenever I need fur for one of my creatures, I go down to the furriers in Blackfriars — Hudson's Bay Company and a few others — and after going through halls and halls of every imaginable fur, you begin to wonder if there are any animals left alive anywhere. But that's how I pick out the fur that I think best suits the particular animal I'm working on. The problem with a furry animal is that it's very difficult to keep the fur from moving around while you're animating. You try to minimize it any way you can, but it's always a problem. Jim did most of the animation on that sequence, and he tried for the most part to handle it from the back so there'd be a minimum of movement. Otherwise you get a rippling effect like *King Kong* had."

"I don't think the dog is as effective as the flying horse," Danforth said, "but I enjoyed animating it more, mainly because we did it rear-projection, which to me is always more fun to do than bluescreen. You can see the actors, you can get reactions, and you're doing a completed composite shot that you can see the next day in rushes. With bluescreen, you're always wondering: 'Is it going to work? Will they get it together? Will the mattes fit?' With rear projection, you don't have that problem. The sequence was originally intended to be considerably longer, and the live-action had been shot with that concept in mind. They realized, however, as they were looking at the film in rough-cut, that too much action had been planned for the Dioskilos sequence. It was never going to be as big as the Medusa sequence, which is the highlight of the film in terms of animation effects, but it was planned to be bigger than it ended up and they just figured they really didn't need two



Sailing effortlessly over the walled city of Joppa, Pegasus and Perseus race to Andromeda's rescue.

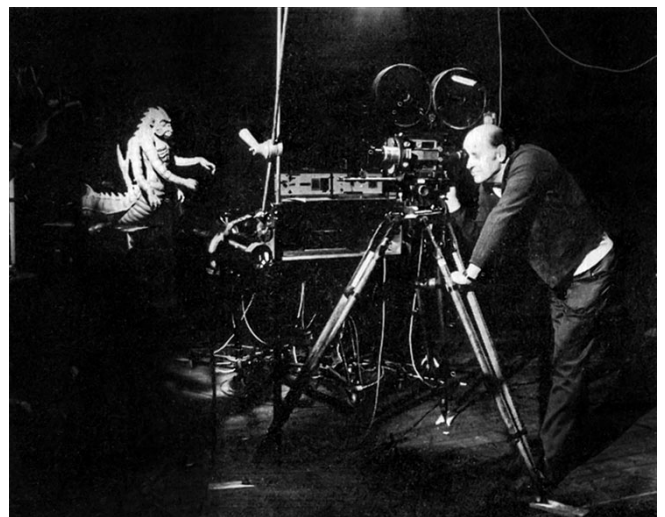
big sequences back-to-back. So that was in the process of being cut down. As a result, I felt that some of the choreography of the dog wasn't exactly the optimum that it might have been if it had been planned as a shorter sequence from the start. It was still fun to do, but the pace was so quick that there wasn't much time to get any real character into the dog."

The Dioskilos sequence had actually been started shortly before Danforth's arrival by Steve Archer. "I did the first scene in that sequence," Archer recalled, "where you see just a slight silhouette in the entrance of Medusa's lair — which is very dark — and these two pair of red eyes looking out. Then it retreats back into the darkness. For that shot, we had little pieces of front projection material stuck onto the eyes, and then we used an ordinary lamp with a red filter on it as a front projection light source. Then I did another four- or five-second shot where he's attacking the men, which was later made into two cuts. That was all I managed to do on that particular sequence, though, because shortly after that, I was moving the camera to line up for a shot and caught my finger in between the hinges on the legs of the tripod, and it split my finger open and broke the bone. So I ended up with my arm in a sling, and I was out of action for about a month. I did manage to do some one-handed animation on some of the Pegasus wing shots, and I was able to put together some test composites, but that's about it."

Test composites were an ongoing requirement during the bluescreen production phase. Since finished bluescreen opticals can take weeks or months of uninterrupted lab work, Harryhausen had developed a means of preparing rough preliminary composites which the editor could then include in the roughcut. As soon as the bluescreen foreground element was completed, it could be loaded into one of two projectors, with the background plate inserted in the other. A red filter over the bluescreen shot would render the blue-backing a dark gray or black. By superimposing the two projector beams onto a process screen and rephotographing the resulting image, an adequate representation of the final composite — with a transparent, but properly aligned foreground element — could be achieved. In



Ray Harryhausen adjusts his lighting in preparation for a scene involving the Kraken.



addition to providing a piece of film for the editor, the technique proved useful in determining at once whether it was necessary to instruct the optical house to reposition or alter the size of the bluescreen element to create a more pleasing composition or a better fit.

Enriquez's shots in the Perseus sequence, in addition to the basic closeups, put the camera a foot or two from the waist up — was used for several extreme closeups.

“Ray gave me a fair amount of guidance on the dog sequence,” Danforth continued, “much more than he had on the horse. At the beginning, I was tending to do it too slowly, and he kept saying: ‘No, Jim. It’s got to be like a dog. He’s snapping and yapping, and his feet are going all the time.’ For some reason, I seemed to have a lot of trouble in the dog sequence in terms of figuring out just exactly what was appropriate for it. There’s one shot that I didn’t really care for in which the dog is pursuing one of the guards, and just bounds from the foreground into the background. It was very bold, and it just didn’t seem to me that a dog that size would make this kind of big, tremendous leap. But I did it that way, and everybody seemed to like it a lot. About the only idea I can specifically remember injecting into the dog sequence was the notion of having one of the heads killed before the entire animal was killed, which was something similar to what was done in *Jack the Giant Killer*. Originally, one of the heads was going to be cut off by Perseus, and then the dog was going to go on and fight a little longer with only one head. But as we got into the sequence, they began to feel that it was too gruesome on the one hand, and too similar on the other to the cutting off of Medusa’s head, which immediately followed it. So they decided not to do that. But I kind of thought the basic idea was good, so I had Perseus appear to cut a nerve or something. Since the background hadn’t been shot with that in mind, there was really no timing in Perseus’ action to allow for that, but I managed to squeeze in just enough frames so that you can see one of the heads go limp and drop, and then the other head keeps on snapping and barking. There are a couple shots like that, and then Perseus kills the whole dog and it falls off the parapet.

“Then Ray had an idea, which I thought was very good, of inserting a bit of animation into some of the shots that I believe had originally just been planned as straight closeups — things like Perseus and the other guards looking out from behind their shields, kind of reacting to the dog. Ray said, ‘You know, if we can put the dog into these shots, we can really keep things going — keep the tempo.’ So we did some scenes looking over the dog’s ears using these reaction shots as background plates. In some parts, I was just holding the dog — because his legs were off the bottom of the frame — and stepping on the camera pedal as I kind of moved him around. Then sometimes I’d stop and reach in and move the head or change it to get what I wanted. So it was sort of half animated and half just pushing it around. Of course, they’re so quick that you almost don’t even realize that you’re seeing the dog, or that it’s the animated dog, but it does sort of add to the energy of the shot. When we were doing those, we had to take into account that they were hand-held shots, and that the camera was moving around following these guys. In some of them, a guy would fall and the camera would follow him down, so I’d have to study the shot and figure out where it was steady enough to get the dog in. Then he’d go through six frames or so, and then he’d be out for a while as the camera made a big lurch. Of course, all this goes by in a split second so it’s nothing most people would be consciously aware of but I think it adds to the overall effect.”

Harryhausen, meanwhile, had moved on to the climactic sequence in the film — a *Kong*-like reappearance by the Kraken to claim the piteously minute Andromeda, chained to the coastal rocks as a sacrificial offering to the titan of the sea. “The word Kraken is actually a medieval term — not a Greek mythology term,” said Harryhausen. “But the sea monster itself was based on the Perseus and Andromeda legend — it was just never named. Our main intension was to make it something other than just a big fish that would come up and snap this poor thing off the rocks and disappear into the sea. It didn’t seem to us that there was much drama there. So we tried to build it as a type of merman, with a humanoid torso and then a face that was kind of a cross between some of these deep sea fish and the ymir from *20 Million Miles to Earth*. Then, since the word Kraken referred originally to giant squids, we gave him four arms that had a tentacle effect rather than being jointed. The Kraken sequence presented major problems, as does any sequence when you’re working on water in stop-motion. Of course, there are several ways to deal with it, but it does slow you down. For one thing, it requires multiple exposures to achieve the churning water effect. Then you have to cover the whole figure with glycerine to make it look wet; and you have to keep reapplying it because the glycerine dries out under the lights. It also deteriorates the rubber very quickly. So it’s not exactly a desirable situation. But between our basic animation techniques and the design of the sets, I think we mastered it.”

In place of the original storyboarded concept of having the giant beast surface directly from the sea — a shot which would have required high-speed photography of a nonarticulated model — Harryhausen opted for a more studied entrance as first one and then all four of the titan’s scaly hands grasp onto a narrow isthmus of rock as the creature pulls itself up into full view. Once partially emerged from the water, the Kraken could then be inserted into the watery background plates with standard splitscreen rear-projection and then augmented with superimposed churning water.

“Ray would have the regular background plate loaded into one projector,” Jim Danforth explained, “and then if he wanted the Kraken coming up through a split, he could add agitated water in the foreground by putting some splash footage in a second projector. That footage they had gotten by



The Kraken emerges from the sea to claim his sacrificial offering.



One shot required the sea titan to lash out at his diminutive assailants, sending both horse and rider plummeting into the ocean. Jim Danforth animated Perseus and Pegasus against blue-backing, and then Steve Archer shot the corresponding Kraken footage as a rear-screen plate for later optical compositing with the Danforth bluescreen element.

detonating underwater bombs to make very large splashes which were shot about forty-eight to seventy-two frames per second. Then they were able to photographically turn everything but the splash black using sort of a variation of the bluescreen process that keyed off the blue in the water and the sky. So they ended up with water against black background that could then be superimposed into whatever miniature shot Ray happened to be doing. He could put it into the second projector and push it in and out until he got the right size for the scene, and then put filters in until it was the same color as the rest of the foam on the background scene. After it was in the right place and was the right color, he'd turn that projector off until after he'd finished the animation, and then go back and super that footage in on a second pass."

As Steve Archer gradually regained the use of his right hand, he turned again to Bubo for some added bluescreen shots that were to be incorporated into the Kraken sequence. Then Harryhausen, who was in the midst of the Kraken animation, injured his finger. "I was just pulling on something, and my hand slipped and it hit a sharp corner. It didn't even break the skin, but the next day, I couldn't bend my finger. I went to the doctor and he said there was nothing wrong with it, but I think I must have cracked the bone. I still can't bend it properly." Harryhausen's mishap took him out of the animation arena, so he busied himself with other requirements while Steve Archer stepped in to relieve him on the Kraken sequence.

"Animation is hazardous work," Jim Danforth quipped. "I'm the only one who didn't get wounded on that job. In a way, though, it was good for Ray to get away from the animation a bit, because he had an *awful* lot of administrative things to do. I know everybody realizes that he's multitalented and very dedicated, but I've certainly been one of his biggest admirers for years and even I was amazed when I got over there and saw how much he really does himself. Obviously, he does most of the animation. But in addition to that, he's very heavily involved with the editing of the picture, plus just all sorts of producer's duties — dealing with the studio, planning ways of selling the picture, interviews and publicity work, writing letters. These things took up a lot of his time. Sometimes he'd come in at five or six in the morning in order to get some work done before he was bombarded by all these other things that sort of ate up his day. So for Ray, it's just all-out, total commitment from beginning to end — and with his type of film, that usually means *years*. Even with the puppets, Ray does almost everything. Janet Stevens does the basic sculpting for him, but Ray assembles the armature. He does the final dressing down and filing, and soldering all the units together. He even makes some of the armature parts himself at his home workshop. Then he does the actual foam casting — injecting the rubber into the mold and cooking it — and he does all the taxidermy work. He puts the eyes in, makes the teeth, the tongue, the ears — everything. He would even repair them if anything broke. We had some problems with the dog, because the legs were very delicate and they'd get loose or break. But if any of the puppets needed work, Ray would just take them home at the end of the day, and the next morning they'd all be back together and ready to go again. I don't think Ray gets as much sleep as most people do, but he certainly gets a lot of work done."

Although most of the Kraken sequence had already been completed, Steve Archer did a number of the remaining closeups, including a couple that he had to synchronize to bluescreen elements of Perseus and Pegasus which had already been shot by Jim Danforth. "One of the most interesting shots had Pegasus flying past the Kraken, who snarls and grabs out and knocks him into the sea. Jim had animated Pegasus flying into the frame and then falling, so I had to run that bluescreen

shot several times to figure out exactly at what point to position the Kraken's hand so it would look like he's actually hitting Pegasus." Once completed, Archer's Kraken shot became the background against which Danforth's bluescreen Pegasus would be composited.

The primary Kraken model, which stood about eighteen inches high, was actually almost four feet long from head to tail. A second one, however, was larger yet — nearly four feet tall from the waist up — and was cast from the same mold as the non-animated version used earlier in the picture for high-speed photography. "Ray wanted to get some very big closeups," said Danforth. "He had one shot in the storyboards of Perseus and Pegasus flying past, where the Kraken just totally more than filled the frame, and he was afraid the little one wouldn't hold up to it. Ray told me, though, that he'd never made an animation model that big before — I don't know that *anyone* has — and he hoped it was going to work. I used it some, and so did Steve; but it proved to be quite difficult to animate with, so eventually Ray decided to go back to using the smaller one, even for close shots. We did do a few shots with the big one, though. There was one where Bubo is flying around pestering the Kraken, and the Kraken sort of turns and gives him a half-hearted snarl, and the blast from his breath is so strong that it totally bowls Bubo over and blows him out the shot. Bubo was a bluescreen element that Steve Archer had done, and I shot the background with the big Kraken. But for the most part, the Kraken sequence was done primarily with the little model."

Jim Danforth ended up staying two weeks beyond his original three-month commitment to the show, but then left England in mid-December in order to be home for Christmas. What few scenes remained were finished up after the holidays by Steve Archer, since Ray Harryhausen's finger still pained him too much to animate. When the effects photography was finally completed, Archer stayed on for an additional week to help clear the stage and crate the animation equipment for storage before leaving the production in mid-January. Harryhausen had several more weeks of work remaining, supervising editing, scoring and other producer-related aspects of the film. Then, with hardly a breather in between, he shifted from production to promotional activities, embarking on a grueling month-long personal appearance tour, highlighted by the inauguration of a Harryhausen exhibit and film retrospective at the Museum of Modern Art in New York. Beyond fulfilling those immediate commitments, Harryhausen looked forward to nothing more than rest and relaxation — a long-overdue, open-ended vacation that would, no doubt, prevail until his next visitation by the seductive Muses of fantasy and stop-motion animation.

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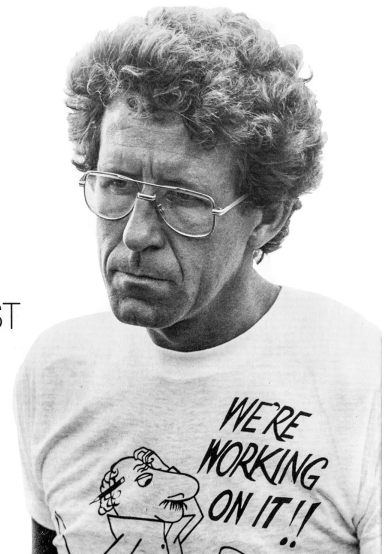
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ROY ARBOGAST



Toss the catch-all phrase “special effects” at the average filmgoer, and chances are his or her first mental image will fall within the realm of special *photographic* effects — something on the order of Douglas Trumbull’s saucers in *Close Encounters of the Third Kind*, or the hallucination sequences in *Altered States*. Way down on the list, if at all, our test subject might mention an example that happens to be a special *mechanical* effect. The likely reason is that mechanical effects are generally less flashy than a piece of spaceship animation or some dazzling optical, and may in fact be taken for granted within the film’s narrative drive. But without them, and their near-perfect execution, film would be all talk and no action.

Mechanical, or physical, effects encompass anything that is done live on the set, more or less in real time. In their most basic form, we are talking about the manipulation of routine film elements like fire, wind, and water. But the range also extends from your not-so-simple sandstorm (*Close Encounters* opening sequence), to a car rocketing across a great chasm (*Hooper*), a remotely controlled mechanical shark that can mimic many of the motions of a real one (*Jaws*), or the crumbling of Los Angeles (*Earthquake*). Most of the effects personnel responsible for these wonders will belong to IATSE Local #44 — Properties. It is the craft guild with the largest number of technical specialties falling within its jurisdiction. Very few of those specializing in some area of mechanical effects have become well known (outside the field) to a degree approaching that of a John Dykstra or a Douglas Trumbull — but one possible candidate for that distinction is Roy Arbogast.

In the early Sixties, Arbogast was working in outside construction and not much caring for it. A friend of a friend told him that one of the film studios was hiring and suggested he check it out. “It wasn’t a childhood dream or anything,” explains Arbogast. “I wasn’t film-oriented when I was younger.” What he found, simply, was more interesting work, indoors and under more pleasant working conditions. Like the majority of people who enter the field, he began in carpentry (set-construction), and later moved into prop-making.

Arbogast’s first assignment of note was assisting on the effects for the Twentieth Century-Fox release *Fantastic Voyage*. This involved constructing some of the “miniatures,” such as the heart valves and brain cells (“reverse miniatures” might be a more apt description here, as the latter, for

example, reached some forty feet in height), and miniature wire work in sequences like the attack of the antibodies on the microscopic sub. Arbogast credits this film in particular as being an important learning experience, and the opportunity to work with leading artisans like Dale Hennesy, L.B. Abbott, and Art Cruikshank cemented his interest in the field.

After *Fantastic Voyage*, Arbogast took a leave of absence from effects work to start up a business of his own — the manufacture of plastic paneling. He returned to film work for Warner's lavish musical *Camelot*, a fairly straightforward prop-making venture. Other features he worked on around this time included *Finian's Rainbow* and *Bonnie and Clyde*.

Warner Bros. television department was quite active in the production of pilots, and especially the new TV-movie form, so Arbogast elected to stay on there for several years. At Warner's, he began to work with breakaway props (which go well beyond the most common variety — window panes and walls), and went deeper into the area generically referred to as "rigging." Rigging is a mechanical effects setup and the method(s) involved; a "gag" is the effect itself. The final result: you "rig a gag."

Arbogast's television work continued at Universal on such series as *Night Gallery* and *The Sixth Sense*. Again, this was anonymous behind-the-scenes work in the prop shop, with an emphasis on rubber creations, lots of breakaway glass, and some wire-rigged flying props. Very little of this work stands out in his memory, but Arbogast does recall an unusual request from *Sixth Sense*: a sliding room that was actually a set built on top of a rocker-tilt platform. However, this sojourn in the electronic vineyards did lead to major breakthroughs into important feature films for Arbogast, and for fellow travelers at Universal like production designer Joe Alves, and directors John Badham, Jeannot Szwarc, and Steven Spielberg.

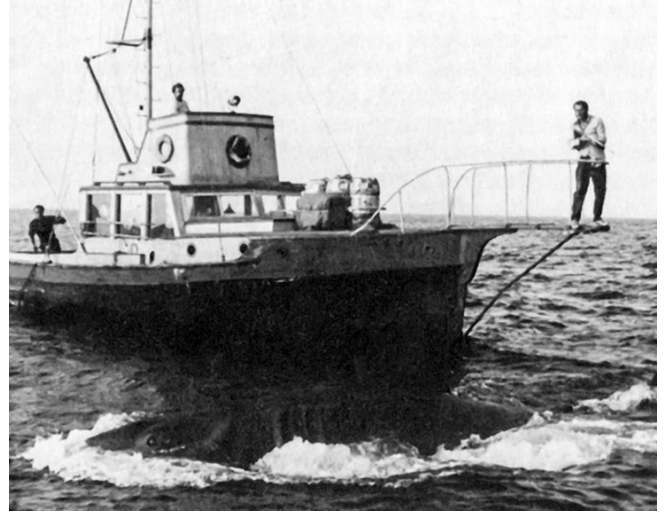
The contribution of the mechanical effects specialist on a film begins with a thorough breakdown of the script. All possible means of accomplishing a particular effect, within the applicable time and budget parameters and in line with the look of the film as conceived by the director and production designer, are considered. Once a method has been arrived at, it is then largely a process of trial and error, says Arbogast. "To me, it's a real challenge to take a thousand dollars and give them a thousand dollars' worth of effect. Some shows with a limited budget are easier, because whatever you can give them is fine. With an unlimited budget sometimes you can work and work and it never seems to come out right." Unlimited funding seems to foster unlimited expectations.

Mechanical effects takes in so much territory, technically speaking, that it would be nearly impossible for any one person to be well versed in all areas. Consequently, there is a strong tendency towards specialization. By the time *Jaws* went into production in 1974, Arbogast had established his specialty in the area of breakaways, plastics, and rubber. While part of a team of effects personnel responsible for the various gags called for in the film, Arbogast had as his principal task the development and maintenance of a realistic skin for "Bruce," the mechanical shark built by effects wizard Robert A. Mattey. The *Jaws* production was a particularly arduous one, beset by serious technical problems and bad weather, and consequently had a greatly extended shooting schedule. Two or three months of extremely long hours seven days a week under such conditions is one thing, but as production dragged on past five and then seven months (often in double shifts), with only two days off in a five month stretch, it began to become a question of the practical limits to endurance and morale. Arbogast's unflagging dedication to the film through all

this endeared him to Steven Spielberg, and he has been closely associated with Spielberg on a number of projects since.

Arbogast had studied plastics chemistry at a technical school for a few semesters, but most of his expertise with plastics and rubber is derived from practical experience. In his line of work, there really seems to be no substitute for trial and error, the process by which he developed the urethane elastomer hide for Bruce. Recalls Arbogast: “I think it was the first time any of these critters were made out of a material other than latex. Bob Matthey and Joe Alves came to me because Bob didn’t want to handle that part. For one person to be responsible for the whole shark, even on *Jaws* 1, would have been way too much. You can’t pay attention to every nut, bolt and eyeball. So we started talking about all the different materials that might be used. Once I got on the project, we set up an experimental piece of a shark that was about six feet long — with the ribs and the mechanics and everything. It was something I could try different skins on. We tried latex, then many different types of urethane. If we hadn’t come up with the material we did, we’d probably still be trying to patch up that shark, because when latex and other materials tear, it’s almost impossible to patch them up to good appearance and full-strength again — especially working out there on the water.”

The material had to be very strong and very flexible, but also suitable for frequent repairs. Whenever a rib, air ram, or other part of the internal mechanics would break, it would either tear the skin outright, or require shark-surgery anyway. “Most of our time actually went to repair work. We had to remodel the shark all the time, grinding it down to the bare surface, and then starting in with the materials and working from the inside out — layers of stretch cloth, nylon reinforcement to prevent weak spots that might wrinkle, and the urethane which was applied as a liquid and heat-dried to set. The maintenance on it was tremendous.” Many nights Arbogast would go out in a rubber boat to work on



The sea-sled shark passes across the Orca's bow in Jaws. Roy Arbogast worked as assistant to mechanical effects supervisor Robert A. Matthey, primarily in the area of developing and maintaining the urethane elastomer shark skin.



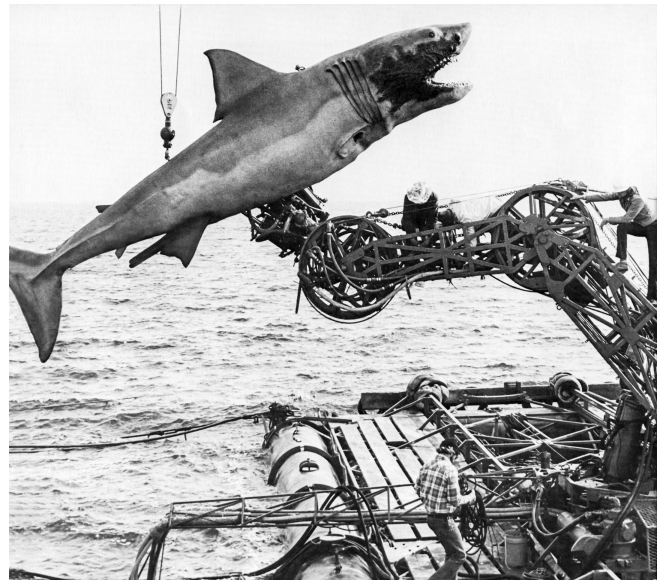
the shark in order to have it ready for morning filming.

We tend to speak of “the shark” when, in fact, both *Jaws* and its sequel had several. There was the main sea-sled shark — a 24-foot monster complete with head, fins, back, and tail — which was towed from a boat. The shark’s keel could be weighted or buoyed, with the fiberglass fins set for diving or surfacing accordingly. Lateral movement could be effected through remotely controlled turning rudders. A separate control unit allowed for fast movements of the head and neck. Nitrogen bottles inside the head supplied “power” for the valves regulating the shark’s mechanical functions. A considerably more involved mechanism was needed for the scenes in which the shark was required to lunge out of the water, a featured behavior which was to play heavily in the film’s climax as the shark systematically sets about dismembering the *Orca* and her bothersome crew. For these scenes, Bob Matthey devised a massive platform with a pivoted arm on which the shark was mounted. The whole rig was submerged in twenty-nine feet of water and sat on the bottom while a team of effects technicians manipulated the actuating air rams from an adjoining barge. (The tow shark ended up having most of *Jaws 2* to itself when three back-to-back hurricanes rendered the platform shark hors de combat.) In addition, faralons — a torpedo-shaped underwater “vehicle” favored by scuba divers — could be equipped with a dorsal fin for an easy, instant shark presence in longer shots.

For *Jaws 2*, Arbogast encored with shark-master Bob Matthey and crew, but actually had far more personal involvement in the non-shark area. On the first film, there had been a few major nonshark gags, and typically, these were of the kind that audiences tend to take for granted, rather than regard as a special effect. Specifically, there was the collapsing pier which nearly takes two would-be sharkhunters to their doom, the scuttling of the *Orca*, and the “barrel” gag. The last is an example of something that looks simple and basic, but was in fact very difficult to accomplish. In order to aid the shark in demonstrating its great strength by dragging flotation marker barrels underwater, the effects crew rigged an underwater pulley system called a “shiv,” which consists of a cable, roller bearings, and guide path sunken with heavy weights. In operation, the device was capable of producing enough force to pull the buoyant objects under, and buck the ocean current at the same time. As always, only the result could be visible to the camera.

Surpassing these stunts for the sequel posed certain problems considerably more complex than those encountered on the original. “It was very tough competing with *Jaws 1*, because everybody

Sharkmaster Bob Matthey devised a massive platform with a pivoted arm on which the shark was mounted. The whole rig was submerged in twenty-nine feet of water and sat on the ocean floor while a team of effects technicians manipulated the actuating air rams from an adjoining barge.



The Jaws 2 platform shark, modified somewhat from the one employed in the original picture, was used for shots requiring the sea beast to lunge out of the water. In operation, the entire rig was submerged in twenty-nine feet of water and sat on the ocean floor while a team of effects technicians manipulated the actuating air rams from an adjoining barge.

knew what you have. They know there's a shark and they've seen it. That's the thing about effects, why they're getting so hard to do. You have to keep coming up with something *more!*" *Jaws 2* had a flotilla of water craft — catamarans, sailboats, speedboats — to be destroyed by the shark. They had to be rigged to capsize or break apart in different ways, not to mention the headache of anchoring each boat individually and choreographing several craft, plus the shark, at the same time in the same shot, despite an uncooperative sea.

One of the major gag boats built for the film was a "flip-over catamaran." Molds were taken of the catamaran hull so that another false hull could be cast in fiberglass. The fiberglass shell, which then covered the front and front-bottom of the craft's real hull, was equipped with a quick-release mechanism and a tow cable. A powerboat would tow the catamaran to a certain speed, at which point the cable would be reeled in sharply, with a tripping of the quick-release an instant later. Accelerated momentum, plus the sharp downward pull of the cable just prior to the quick-release, would force the catamaran nose down into the water and overwhelm the scuppers, causing the craft to flip end for end. Another stunt called for a sailboat to crash into a smaller craft that already lay upside down in the water. Like all the *Jaws 2* gags requiring trick boats with breakaway sections, the construction had to be solid enough to be seaworthy — at least for awhile — yet weak enough to break cleanly at the appointed time.

A standout in the film, and a truly outrageous gag, had the shark destroying a rescue helicopter. Biting one of the helicopter's pontoons, the shark tips the chopper over and drags it down, causing the rotors to smash apart against the water. For this sequence, Arbogast's crew designed a full-scale breakaway helicopter that could double for the real thing. The chopper's rotors — fully functional — were fiberglass breakaways on breakaway rotor mounts that could be jerked down by cables. A compressor-fed air motor — safer to work with out on the water than a gas or electric one — powered the rotor from beneath the surface. To the uninitiated, fiberglass might seem like child's play next to real helicopter blades. Not so. "That stunt was hairy as hell," concedes Arbogast. Additional insert shots of the rotor blades, shooting up to pierce the sailboat's sail, were filmed on the beach at a sharp up-angle, with an air mortar used to fire the blades. Notes Arbogast on the importance editing plays in making cinematic sense out of his various gags: "It was all break, chop, cut-away — all brief cuts that when put together made the effect"

Involvement with water and sharks did not end for Arbogast on *Jaws* and its sequel. He worked on *Islands in the Stream*, and a well remembered commercial for Colt 45 Malt Liquor parodying the *Jaws* phenomenon. Anything shot on water has more than its fair share of problems to haunt both effects men and camera crew: tides and currents, water depth variations, surface reflections, and other changing conditions making it very difficult to match footage. A further complication is that the solution to a photographic problem may be totally at odds with what the effects people need to do, or vice versa. Comments Arbogast, only half-seriously, "I've done enough water shows that I don't mind if I never do another one."

Close Encounters of the Third Kind provided an effects man's field day, but also the professional disappointment of seeing ambitious efforts go unused for reasons not necessarily related to the success or failure of the attempt. One concept that was realized technically for *Close Encounters*, but not produced on film, was the cuboids — tiny, squarish scout craft with skittish, independent motions that were to first reconnoiter the Devil's Tower base and then ferry the mothership in. They

were intended to be sent flying across the hangar set, with quick darting movements through the assembled groups of base personnel — and Spielberg at first envisioned having hundreds of them. Arbogast's crew built some of the eight-inch square cuboids, and worked out a means of flying them on double-fine piano wire which also carried the current needed to make them glow.

"They were on sliding contacts — wire rigs. And each of them had a 500-watt quartz light inside. In order to get that light to burn so you wouldn't see the wires, we had to take the wire size way down, lower our amperage, and raise the voltage. The guy wires were our power supply, and the cuboids were suspended from the contact wires. We used a system of compound shivs, and by opening the blocks on the shivs we could make those lights, in a chain, just shoot across the set. We had seven cuboids on each chain, and three chains in all — each with a different axis of movement. The problem with the cuboids, though, turned out to be a fairly common one in our business. Once you get into a film, you often find that certain things turn out to be harder than anyone thought, or just not practical. With limitations in time, budget, and crew, you have to start asking if it's really worth it to get a particular piece of film, or whether that thought and effort should best be channeled elsewhere. Then it's a wise director who knows when to stop and try for something else. We got the cuboids working, but there were five thousand volts going through those lines, and to have sixty extras running around on that huge set — it just would have been too dangerous." As a result, after three days of shooting and trying to circumvent the problems inherent in the concept, Spielberg ultimately elected to drop it entirely.



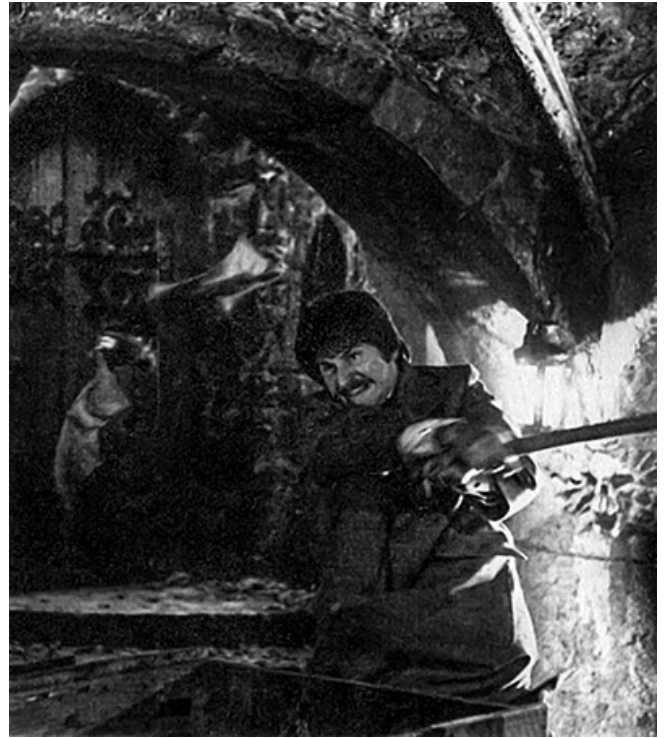
For Dracula, one of the main objectives was to devise a series of flying bats, each with different capabilities. Arbogast and David Beavis rig one equipped with flash paper wings which could be ignited during flight.

“We always start out with gigantic ideas. That’s the fun part. Sooner or later you take the ones that work best. Certain gags may work, but not for that film. It can be sad, after months of work put in, when they get scrapped. But sometimes you have to build these things so the producers and director can decide, and so we can see it for ourselves.”

Another concept dropped during production had the landed mothership enveloped by a zone of null gravity, such that anyone approaching close enough to it would start drifting up into the air. As many as twenty-five flying rigs were built, and tested to show their feasibility. The fine piano wire used to suspend the flying rigs was highly susceptible to kinking, which would dangerously weaken it, particularly if the ten-year-old girls playing the extraterrestrials did not remain perfectly still. Relates Arbogast: “It was one of those things that was in the script, but kept getting put off. It turned out to be too much to do on location. To do a sequence like that we should have a month to choreograph it, a month to train everyone to fly, and time to get our own cues down right. You can’t do something like this in a matter of a week or two. We ran out of time.”

More down to earth mechanical effects in *Close Encounters* included vibrating mailboxes and railroad signals, worked by solenoid-controlled pneumatics, and the sudden loss of gravity inside Roy Neary’s truck. The latter effect was accomplished by mounting the truck cab on a large gimbal rig, so that the entire cab could be spun around to make use of centrifugal force. The pivot point ran lengthwise, roughly along the truck’s drive train. A black background all around kept the camera (mounted outside a window on the truck, and therefore apparently motionless relative to it) from offering any distracting point of reference. “It was like a carnival ride,” said Arbogast. “Everybody got a turn inside. Talk about losing your stomach — we gave Joe Alves a super-good spin. By the time he got out he couldn’t even walk.”

The large panes of “glass” on the control room of the Devil’s Tower facility, which shatter from the alien’s attempts at musical communication, were made from Polystyrene #2, a plastic with a low-impact breaking point. In panes of that size, the breakaway glass is rather expensive, but three panes had been secured to insure getting the shot. The first was inadvertently shattered just by temperature changes from the heavy on-set lighting. “We got the next one up there,” recalls Arbogast, “and the cue was to be ‘Mike’ — for Mike Wood, one of my guys. He was up there with an air mortar that would shoot air and small pieces of glass at it to make the pane shatter. We were



Jonathan Harker lashes out at an attacking bat. To avoid the straight-line trajectory characteristic of most wire shots, Arbogast developed a boom-arm device which enabled bats to dart about in random flight patterns.

image

The stormy passage of the ship transporting Dracula to England was produced in the studio with miniatures and a full-scale mock-up which was inundated with water from dump tanks and fire hoses.

only about a minute away from doing the shot when Spielberg called for another crew member named Mike. There went the second one.” Fortunately the third shattered successfully, and on cue.

A demonstration that the simplest method is often the best: the eerie shots of a floor grate unscrewing itself as a fearful Melinda Dillon looks on — part of the siege of Jillian’s house, a sequence comprised largely of inserts that had to be shot after production funds had run out — was the work of a crew member under the grate, twirling the screws up by hand.

Dracula, John Badham’s lavish version of this much-filmed story, was Arbogast’s subsequent assignment. With a hefty budget behind it, the production was able to make use of authentic English locations and a spare-no-expense approach to set design, period detail, props (like a full-scale square-rigger, wrecked and dragged up onto the beach), miniatures, and elaborate mechanical effects. Arbogast relocated to England for six months to work on the film, which had enough production complexity to keep three filming units busy on a near-continuous basis. His involvement covered a fairly wide range, but with a large portion of the work in an area requiring close cooperation with the makeup department. These could be lumped together under the category of gore effects.

Dracula has many ways of dispatching his adversaries, as when, in the form of a wolf, he is wont to rip out a throat or two. The prevailing standards of explicitness and “realism” have advanced considerably even from the days of the Hammer series, so this necessitated special “torn flesh” appliances, equipped with a blood delivery system. This was used to considerable effect when the captain of the vessel transporting *Dracula* to England is slaughtered at the helm of his ship. A similar effect was called for in the shots of Van Helsing and Dr. Seward cutting Mina’s heart out to insure that she will not again rise from the dead. “We took a mold of the girl’s chest,” Arbogast explained, “and we made a false chest out of a soft plastic. We had her on a table with a false bottom (as in the classic sawing-a-woman-in-half illusion), so she was mostly under the table, with this piece on top. The material is very fleshlike, and we had springs on it to pull and stretch; so as you cut in, it would open up. We made two of the appliances — one that bled and one that didn’t. They ended up using the one that didn’t bleed, because at that point in the story she wasn’t supposed to have any blood.” It seems these aforementioned effects — the throat rippings and heart removal — worked a bit too well, as they were heavily trimmed in the picture’s editing. “They toned it down a lot,” says Arbogast. “It could have been *far* more gory.”

Another gore gag involving Mina took place in an earlier scene underground. Van Helsing and Seward have tracked the girl, now a loathesome, blood-lusting fiend, to her hidden lair. Van Helsing is horrified at the discovery of what his daughter has become, but when she suddenly attacks him he reflexively defends himself, impaling her on a sharp stick. In one continuous shot, with no cheating camera angles, the stick is seen to go all the way through her. “While we were doing that,” Arbogast recalled, “it was an awful thing to watch. We made a rubber slipcasting of the end of a stick, and that was fitted into an appliance on the actress’ back. The appliance had a diaphragm inside controlled by an electric solenoid so it would inflate like a balloon. You could walk up to someone, spear them with the lance, and it would instantly come out the back.”



Dracula was made to climb up and down walls by constructing the surfaces on a slight horizontal incline rather than vertically. An overhead harness rig was used on actor Frank Langella to make him appear as though he were floating somewhat mystically.

image

Arbogast was charged with producing a wide variety of oversize props for The Incredible Shrinking Woman. Attention to detail was evident, even to the point of producing large-scale shredded newspaper for Lily Tomlin's cage. The giant typed document was prepared by a photo mural firm.

image

Roy Arbogast with a bar of soap fashioned from paraffin.

image

Jeff Switzer making hair (for the giant gorilla shoulder in the background) from fiberglass roving. Arbogast was particularly proud of the urethane telephone receiver.

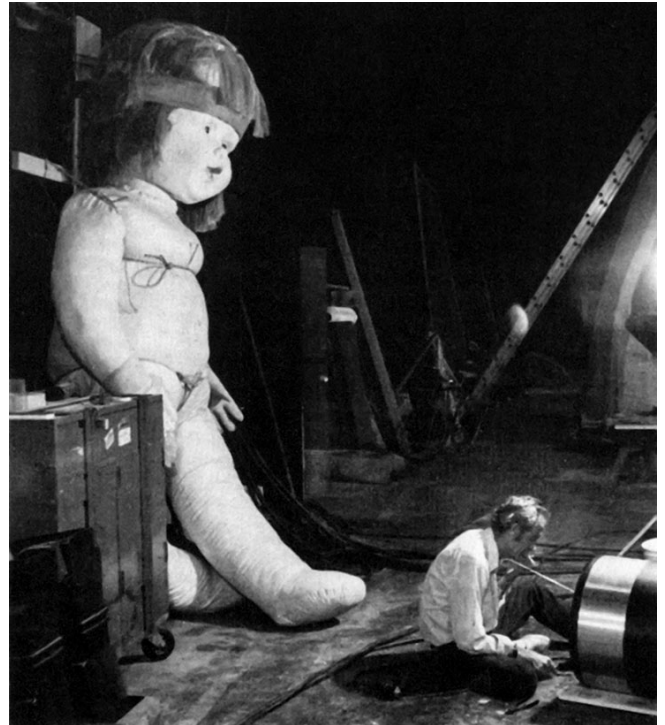
In one startlingly unexpected scene, *Dracula* terminates the services of his feckless servant, Renfield, by twisting the madman's head a full 360 degrees around. Knowing this was done with a remarkably lifelike manikin is not enough, because the substitution, as edited, is extremely hard to detect, and because of Arbogast's ball-socket mechanism for the neck. The head would twist around until the ball hit a catch, clicking into its final position — with the neck snapped back and the eyes rolled upward.

Dracula wouldn't be *Dracula* without bats, and this production used several varieties. There were bats that: flew on wires; shot down wires like a slingshot; could be hand-operated at the end of a pole; and one that could be attached to an actor's clothing in full bite. A shot of *Dracula* swooping down a flight of stairs, changing into a bat in mid-flight, was a combination of flying rig (complete with large, aerodynamically-sound bats' wings built into Frank Langella's cape), a wired bat, and fast editing.

One type of bat was operated from the actor's body, with the motor and controls concealed in his clothing, and the power supplied from a wire above. A simpler variation of this bat could be attached directly to an actor's neck, and mechanically operated by wires running down his shirt sleeve. Another was controlled mechanically by wires hung from a pole on a boom arm above. When the wires were moved, the bat's wings would flap up and down. With the top of the set left open, the design of the boom arm allowed it to track, arc, and pivot in several ways. By using this system, it was possible to fly the bat in and out of the set, or all around it, thereby eliminating the straight-line trajectory characteristic of most wire shots.

"The bat that flies into a ray of light and catches fire had wings made of flash paper. Power could be run down through the lines to an igniter. It looked like a little airplane that got shot down, with smoke trailing off behind. Everyone was laughing on the set." Fortunately, the effect did not look as humorous on film. All of the other mechanical bats, such as the cable-action one for closeups, operated at the end of a pole against a black backing, had fiberglass bodies, rubber heads, and a fine nylon material for the wings.

Dracula has also been known to turn into a wolf. The throattrippings early in the film were buttressed by the presence of Arbogast's mechanical wolf, for the close to medium shots. It was assembled in London at the last moment when the real wolf proved less than cooperative. Operated by air rams, the mockup was actually just the front half of the animal. Modeler and sculptor Colin Arthur crafted the head and face pieces, which, through pneumatics, could pant, snarl, and bite.



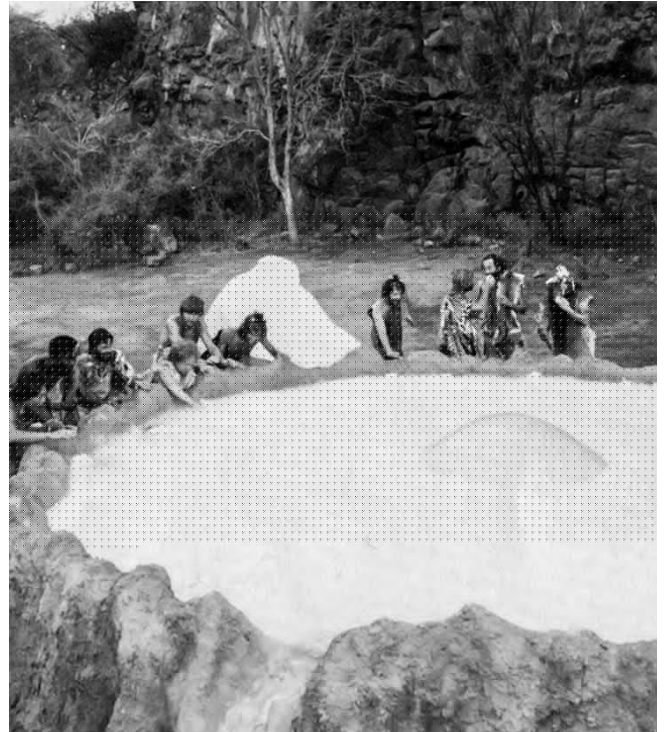
A king-size doll gazes over Larry Needham's shoulder as he works on the giant microphone.

Using quick cuts and shooting just over the head was convincing enough, especially since the audience's attention was focused on the gore of the throat effect.

Other effects Arbogast worked on for *Dracula* were a bit more off the beaten track than most mechanical effects. The best means he devised for *Dracula* to appear at a window began with a coffin-shaped box. Dead black, it was apparent only as a vague outline. At the bottom of the box was a shallow depth of hot water, then lights, and a mesh screen as a cover, on top of which Langella reposed. When dry ice was dropped into the heated water, a dense white cloud would rise up over the actor's form. Shot in reverse, the effect was that of *Dracula* forming out of smoke outside a window. "It was beautiful, but a bit too mystical for the film," says Arbogast. Because it wasn't used, he adds, "I'd still like to use that one sometime."

An almost surreal effect had Langella traversing the outside of a castle-like building, up and down, with little regard for the laws of gravity. Recounts Arbogast, "He had to crawl down the wall better than a spider. To get him to do it, of course, everything would have been hanging down the opposite way — the cable would be hanging over his head, and it would be kind of a silly deal. So we built the wall in reverse and laid it on an angle — about 35-degrees. Then we had him on wires, rigged above him on a track, so he could climb up this thing. The wall goes up into black (for later matting in of a downward view of the ground and the bottom of the building). When you shot it the other way (from above, looking down at the "top" of the building), he'd be climbing down, towards the camera. The wires and body harness were to help him climb 'magically,' without his knees on the ground, or even much contact with the wall."

Arbogast also worked on a different version of the vampire's demise than the one ultimately filmed. Originally, *Dracula* was to melt away under the influence of the sun's rays, but without the telltale step-down opticals that had been employed in some of the earlier Hammer films. Arbogast had been working with a special kind of wax covered by a latex skin, with the melting set off by heat guns, but time ran out before the process was perfected. The adequate, though unspectacular, alternative had Langella swinging from the ship's



Arbogast's crew fabricated a poached pterodactyl egg for Caveman. The egg white was made from urethane elastomer, and the yolk was a weather balloon filled with slimy driller's mud dyed yellow.

image

Arbogast's crew fabricated a poached pterodactyl egg for Caveman. The egg white was made from urethane elastomer, and the yolk was a weather balloon filled with slimy driller's mud dyed yellow. / Actor Dennis Quaid clings to a full-size mock-up of the homed lizard's tail which was used to intercut with longer shots filmed in stop-motion.

image

An old Convair airplane was carved up, spread around downtown St. Louis, and set afire for a pivotal sequence in *Escape from New York*.

mast via a body harness, with successive makeup changes to suggest a withering away. Finally, the wind blows *Dracula*, or what's left of him, free — a set of large bat's wings radio controlled to expand for flight, but otherwise towed on a thin cable by an unseen helicopter, towards a hoped for sequel.

Arbogast had been set to do the mechanical effects for Steven Spielberg on 1941, but production delays and a schedule conflict made this impossible. Instead, Arbogast worked on Universal's *The Incredible Shrinking Woman*, and then *Caveman*, a Turman-Foster release for United Artists. The former contains a battery of oversize props, such as a giant frying pan and strips of bacon, an enormous sink, faucet, and disposal (props larger than many sets), and a four-story elevator built in full scale. Perhaps the most unusual prop built for this film was a gigantic gorilla shoulder operated by massive air hoses, whose wild ride practically shook the fillings from the teeth of the hapless stunt woman doubling for a shrunken Lily Tomlin.

For *Caveman*, a "prehistoric comedy" directed by Carl Gottlieb (who co-wrote both *Jaws* pictures), Arbogast's crew supplied some "conventional" props like tar pits, an ice cave, and a fried pterodactyl egg, as well as full-size mechanical parts of the primary prehistoric animals, needed to cut in with postproduction model animation. These included the pneumatic tail of a great horned lizard, which whips back and forth; the back of the same creature — a combination of pneumatics and an electric golf cart chassis inside — that could ride along and then rear up suddenly like a bucking horse; and the foot of a tyrannosaurus rex.

Arbogast's most recent handiwork can be seen this summer in *Escape from New York*. A change of pace for director John Carpenter, *Escape from New York* is a futuristic thriller concerning an unorthodox attempt to rescue the President of the United States after a near-fatal plane crash plummets him into Manhattan, now totally transformed into a maximum security prison for an army of cutthroats and renegades. "*Escape from New York* was for me a different type of show than what I normally do," says Arbogast. "Rather than a lot of props and gags, this is more the typical kind of effects work — car wrecks, explosions, powder work — that kind of thing." Among the major challenges of the film was the staging of a controlled conflagration in downtown St. Louis (doubling for New York) for the crash aftermath, and the construction of a taxicab which is blown in half while crossing a booby-trapped bridge, but in such a way that the rear seat passengers can exit without a scratch.

There have been notable technical advances in or related to the mechanical effects field over the years — the development of new plastics, the impact of electronics, and new camera rigs allowing photography with a versatility and realism previously unavailable. But the contemporary effects man does not lose sight of the remarkable things that were somehow accomplished much earlier in the history of film. "A lot of times," remarks Arbogast, "I would like to think we've done something for the first time; but then I'll be watching some old film on TV, and all of a sudden I'll have to say, 'Oops — they did that thirty years ago.' I love to work around the old-time effects guys. Bob Mattey is one of my favorite people. There's not much that he hasn't done. You ask Bob one question and he'll give you ten answers: 'We can do it this way, that way, or the other way...'"

As to the future, Arbogast is now mulling over forthcoming projects for John Carpenter, Steven Spielberg, and others. In the realm of special mechanical effects, he remains confident that, given sufficient time and money, practically nothing is impossible. "Anything that could be desired in a

film can be done. I have scripts where they are reaching *way out* to get some unusual and different effects.” Laughs Arbogast, “I just hope they have a lot of money!”

CAVEMAN THE REAL STARS

image

article by

Scott Vanderbilt

“Everybody tells me, ‘Dinosaur pictures are *dead*,’ Jim Danforth stated. “And I always say to them, ‘The only thing that’s dead is bad movies.’ You can keep making dinosaur pictures as long as there are valid stories to be told that involve dinosaurs. How many westerns have been made? Nobody ever said the western was dead — well, maybe recently, but they had to make about two thousand of them first. The challenge is finding new dimensions.”

Finding new dimensions can indeed be something of a chimera, but writer-director Carl Gottlieb feels he has done so with *Caveman*. “Most directors feel their picture is special, but *Caveman* really is different. It’s one of those increasingly rare things — a truly original film. That’s because it is a comedyprehistoric-effects picture. There have never been any. The closest anyone’s ever come is Buster Keaton in *Three Ages*, his spoof of *Intolerance*. And the only other thing that comes near is *When Dinosaurs Ruled the Earth*, which wasn’t a comedy, but it did have dinosaurs with personality.”

Caveman is unique in that it interjects an element of humor into heretofore virgin territory. Primordial slapstick — uninhibited, ribald, scatological. *Animal House* meets *One Million B.C.* A concept altogether unprecedented in the genre. But novel though it may seem, *Caveman* bears scars — witnesses to the seemingly insurmountable adversities encountered during the production of its special effects. Unfortunately, but perhaps not surprisingly, a good deal of *Caveman*’s woes were related to the involvement of Jim Danforth, certainly one of the most talented, albeit controversial, practitioners in the field of stop-motion animation. An Oscar nominee for his work on *When Dinosaurs Ruled the Earth*, Danforth had only recently emerged from the trauma of his own cancelled *Timegate* project.

Producer Larry Turman originally envisaged *Caveman* as a prehistoric comedy, an inspiration spurred, curiously enough, by the thought of Buddy Hackett in a loincloth during an appearance on *The Tonight Show*. Turman shared the idea with his producing partner David Foster, and the pair set out to recruit a scenarist who would nurture the budding project and develop a script. Ultimately decided upon was Carl Gottlieb, best known as co-author of both *Jaws* films, but a man with roots firmly planted in improvisational comedy. “In October of 1977, Turman and Foster approached me with an idea for a movie. They asked me, ‘Do you remember *One Million B.C.*?’ I said yes. And they said, ‘The same, only funny.’ So I started to write and ended up with a first draft that was considerably different from the *Caveman* that was finally made. It was far more political and satirical in nature, and the characters spoke colloquial English. And at this point, there were no dinosaurs in the picture. But David Foster said, ‘If we want to do a prehistoric comedy, we’re got to have dinosaurs’ — one of those casual lines that ends up costing a million dollars and six months of production time.”

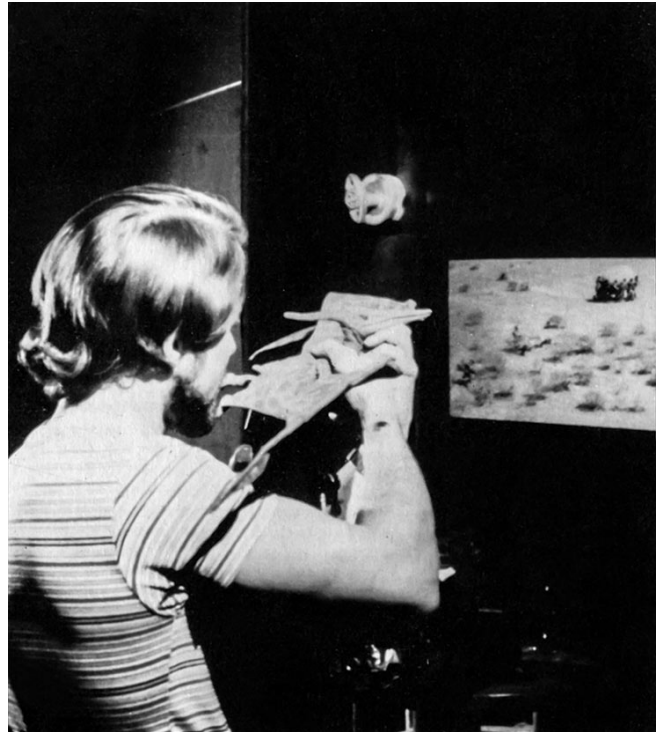
This notion necessitated a means of realizing the dinosaurs on screen. Jim Danforth, the first person contacted to helm the production of the visual effects, initially turned thumbs down. In the

wake of Danforth's rejection, Larry Turman began to cast about for alternate choices, including David Allen, who would later come to play a key role in *Caveman*. Concurrently, however, Turman persisted in contacting Danforth, who finally agreed to a meeting which resulted in his reconsideration. "Turman seemed really sincere about this," Danforth recalled. "He talked about some of the things that he had seen that I had done — primarily *When Dinosaurs Ruled the Earth*. He had actually seen it and responded to those things that I had hoped people would respond to, which I was appreciative of. And, as much as I despised the *Caveman* script and the whole intent of the picture, I thought it was a great opportunity for some really interesting animation of a kind we've never seen before — good, solid character animation. And that really appealed to me. I still hated the script, but I began to think that maybe I'd be passing up a very good opportunity if I continued to decline this film. So I said, 'All right, I'll do it.' "

Almost immediately, work got underway. While Rudy DeLuca was brought in to aid in script revisions, Danforth procured Randall William Cook to compose the all-important special effects storyboards. Cook had performed similar chores on Danforth's *Timegate* project. "Jim wanted me to draw up the storyboards for the effects sequence. He made a lot of rough sketches himself, and in some instances, I'd follow them to the letter; in others, I'd just take the script and go nuts with it, adding any bits of business I cared to. In those cases, Jim would take whatever was to his liking — whatever was new and he could use — and omit anything he didn't care for. What I was doing basically was putting in, not gags so much as personality bits. Since the film was a comedy, we decided early on that it would be fun to play the dinosaurs for comedy rather than just play them straight. For example, the first thing I boarded was the first scene of the tyrannosaur. I would have him — when he saw somebody — not just react, but rub his hands together. Jim wanted to have someone throwing rocks at him — so we'd have the rock bounce off his nose and he'd catch it in his little paw, look at it and throw it over his shoulder. That sort of thing. That gag didn't make it to the picture, but the hand-rubbing bit did — several times."

Simultaneously, Danforth began drafting an effects budget and designing the film's two principal dinosaurs. He also assisted in the preparation of a proposal that would be made to the brass at United Artists. After an obligatory deliberation period, the green flag was given and Danforth was called in to commence preproduction in earnest.

"Suddenly, however, the attitude was completely different," said Danforth. "Before, the producers had all been very, very anxious that the project might totally disintegrate because United Artists needed the finished film in August. Now it was: 'We've got the money. Let's just carry on as though there were no peculiar problems inherent in this film. And the first thing we're going to do is rewrite the script.' "



Effects supervisor Dave Allen animates one of the rear-screen shots in the pterodactyl sequence.

image

Aerial background footage was taken from a helicopter for an over-the-shoulder shot looking past the flying reptile.



Although most of the pterodactyl shots were done with the puppet securely affixed to a rigid rod-mount, Peter Kleinow did a couple using an overhead wire rig.

Danforth was dismayed. His original \$449,000 effects budget had been predicated upon the preliminary storyboards, which in turn were based upon the original script. And as Danforth knew, more often than not, modifications in the script would alter other factors as well — like effects costs and delivery time. “For some reason, I was never able to make that point to the producers, even though I stated it and stated it. So finally, I just included it in the deal memo. And when they saw that — total chaos.

Because the deal memo had to go to United Artists, and Turman-Foster’s concern was not that there was a problem — their concern was that they might lose face. There was no interest in determining what could be done to assure coming in on budget and on schedule — no interest in that whatsoever. The object was simply to prevent that information from reaching United Artists. On top of that, they wouldn’t let Randy do the new storyboards. Now that it was a ‘real movie’ with funding, somehow the guy that did the presentation that got them the money wasn’t good enough anymore. Now they had to have a ‘real’ storyboard artist. So they brought in Mike Ploog — who is very good, but the point is that everything had been running so smoothly. Now, they’d totally changed the plan.”

Danforth was beginning to find it virtually impossible to negotiate with Turman and Foster, both on matters of principal and concept. Fundamentally lacking was the cornerstone of all arbitration — communication. “Eventually,” Danforth continued, “we came to a more or less completed storyboard with twentyfive percent more shots than the original script proposal we bid on. At that point, I had to force on them the news that they were asking for more work, that some of it was of a more complicated nature, and that it was going to cost them an additional \$83,000. Of course, panic ensued. They literally started screaming. And again, instead of dealing with the problem, which was: ‘What do we do about this? Do we reduce the work? Do we come up with the money?’, the big concern was: ‘Whose fault was it?’ Ultimately, I got a phone call in which I was told I would get \$75,000 — not a penny more — and that I still had to do all of the additional scenes.”

As negotiations over the deal memo continued to rage, several story conferences were being held by the producers, Carl Gottlieb, Jim Danforth, and the film’s original production designer, Joe Alves, to determine the “look” of the film as well as of its two most engaging characters — the tyrannosaurus rex and the horned lizard. “In *Caveman*” related Carl Gottlieb, “the creatures are recurring characters. Unlike most dinosaur movies where the dinosaur appears and is either killed or driven away, our dinosaurs keep coming back for more. The tyrannosaurus rex is the second heavy after John Matuszak in terms of time on screen and affecting the plot. So, they had to be threatening, but at the same time, it’s a comedy — they had to have character.”

However, translations from mental concept to corporeal design are frequently confused and occasionally serendipitous. “Originally, Carl wrote ‘horned lizard’ in the script,” explained Danforth. “What he meant was a triceratops. I didn’t know that. I read ‘horned lizard,’ so that’s what I came up



Rear-screen process photography was predominant in the picture, but Dave Allen employed his frontlight-backlight traveling matte technique for some of the more involved pterodactyl shots.

with. It wasn't any wonderful intellectual achievement of mine that I worked through; it was just the only thing that occurred to me. When I read 'horned lizard,' I saw a lizard with a horn. 'That's pretty good. I like that idea.' So, I started in on it and decided to give him funny eyes that work independently — kind of like a chameleon, but not really. I did a drawing of that and showed it to Carl and he said: 'This is really great. But it isn't at all what I had in mind.' That's when I found that he had meant it to be a triceratops — I don't think he knew the actual name of what he wanted."

Nevertheless, both of Danforth's designs were adopted unaltered. Though he was not able to complete the horned lizard before he left, Danforth did finish the tyrannosaurus rex. "I sculpted it, painted it, put the eyes in it — everything. When you're designing something in this vein, you don't necessarily want to take your subject too seriously. You don't want to be rigid and say: Well, gee. A tyrannosaurus is scary. It's always *been* scary and I'm not about to do one that isn't.' So I decided to make him kind of sleepy-eyed and snaggle-toothed. And fat so maybe he can't run quite as fast. But he's still big and he can always fall on you. Dangerous, but... What I wanted was an old, fat, degenerate tyrannosaurus. And I got it, I think. So I was real happy with it. Strangely enough, when I showed a photograph of it to Ray Harryhausen, he didn't like it at all — not at *all*. He kept saying, 'Looks like it's *pregnant!*'"

Also among Danforth's primary tasks was the establishment of Effects Associates, Inc. Brought into being solely as a postproduction effects facility for *Caveman*, Effects Associates was located in Westlake Village — safely outside the Los Angeles County limits so the producers could deal with the crew on a more frugal non-union basis.

If nothing else, all parties involved agreed upon *Caveman*'s primary location. After scouting in Hawaii, Utah and Arizona, Mexico was decided upon as the ideal locale for principal photography — more specifically, Los Organos, an area outside Durango that was soon to come under the scrutiny of Danforth during a preliminary reconnaissance mission in December 1979. "My plan was to take a still photograph of each animation setup — wherever we'd be shooting the background plates that would be used behind the puppets. However, at the time we went down, the script was not yet complete, so we couldn't totally do that. We did as much as we could, and it proved to be very helpful in terms of saving time in making setups later, but it wasn't one hundred percent effective."

Upon his return from Mexico, Danforth had to confront the tangible aspects of outfitting and assembling a crew to staff Effects Associates. In addition to Cook, who had been brought aboard at the outset, the remainder of the core unit was comprised of Dave Allen, James Aupperle and Peter Kleinow. Allen, a veteran of *Laserblast*, *The Day Time Ended* and his own abortive *Primevals* project, had previously worked with Danforth on *When Dinosaurs Ruled the Earth* and was an obvious choice. Aupperle, who had cut his teeth on *Planet of the Dinosaurs*, was tapped to discharge the optical duties. He subsequently left *Caveman* early on and was replaced by Spencer Gill. Kleinow, fresh from *The Empire Strikes Back* and a man of unwarranted anonymity, accrued his years of experience working on the "Gumby" and "Davey and Goliath" series at the old Art Clokey Studios. Stepping in at various points during production were Dave Stipes, Laine Liska and Ernie Farino.

image

Peter Kleinow animates the horned lizard for the second effects shot in the picture.

The February start date was fast approaching. Although haggling over the deal memo had mercifully come to a close, Danforth and the producers continued to have difficulty seeing eye to eye on other matters. "One of the conditions I put on taking this job in the first place was that the producers and director would get from the Directors Guild a letter acknowledging that I was doing the effects direction. I had practical reasons for this and I also had some personal reasons. The practical reasons were that unless the producer, director, cameraman, et cetera, realize that the person doing the effects is there on the set in a directorial capacity, it's almost impossible to cause to happen those things which must happen if one is to eventually complete the visual effects. The second reason is that I was personally getting very tired of doing this work on films and never getting any credit or recognition. I've probably qualified three or four times for Guild membership, and still not being able to join, because no one would ever acknowledge that I was doing the work. Hammer acknowledged it on *When Dinosaurs Ruled the Earth*, but because the work was done out of country, the Guild would not qualify me. I didn't want to be unfair to Carl. After all, *Caveman* was his first directorial effort and I didn't want to take his glory. But, on the other hand, I didn't want to short-change myself either. So I said to Turman-Foster: 'Let's just leave it at this. You get a letter from the Guild acknowledging that I'm doing this work, and that'll be sufficient for me.' Well, the bottom line is they refused to do it."

A key decision made early in the conceptualization stage was to utilize VistaVision format in the production of the visual effects. The original request to use the horizontally-fed, largeframe system — which exposes eight perforations worth of 35mm film per frame rather than the standard four — came from Carl Gottlieb and Joe Alves. Both were wary of the poor image quality characteristic of most dimensional animation, and queried Danforth on VistaVision's feasibility. Danforth, who had made his



Most interactive stop-motion animation makes use of carefully staged live-action background plates. In postproduction, these plates are rear-projected, one frame at a time, onto a translucent screen. Between the screen and the camera is a table upon which the animation puppets are manipulated. To give the impression that the animated creature is within the frame, rather than simply in front of it, a split-screen matte is introduced by masking the lower portion of a pane of glass (positioned between the camera and the table) while the puppet is being animated against the rear-screen image. Once the animation is complete, the film is rewound to the first frame, and the glass matte is replaced with a countermatte allowing the lower portion of the frame to be reinserted into the scene.



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first VistaVision tests in 1968, and had used it in several film projects over the years, was more than happy to accommodate.

"I think VistaVision's pretty darn good," commented Dave Allen, who was later to inherit the decision.

"However, rearprojection has limitations which have to do with several things, only one or two of which are particularly improved by going to a larger format. You still have the problem of loss of color saturation and chroma. You have the problem of the change of contrast, the loss of blacks, the loss of detail in highlight and shadow areas. So all the things which are factors of duping off a color print remain essentially unchanged with VistaVision. But you do pick up in resolution and also in granularity."

Most interactive stop-motion animation makes use of being animated against the rear-screen image. Once the animation is complete, the film is rewound to the first frame, and the glass matte is replaced with a counter-matte allowing the lower portion of the frame to be reinserted into the scene. Between the screen and the camera is a table upon which the animation puppets are manipulated. To give the impression that the animated creature is within the frame, rather than simply in front of it, a split-screen matte is introduced by masking the lower portion of a pane of glass (positioned between the camera and the table) while the puppet is being animated against the rear-screen image. Once the animation is complete, the film is rewound to the first frame, and the glass matte is replaced with a counter-matte allowing the lower portion of the frame to be reinserted into the scene.



Despite the fact that the rear screen is invariably positioned behind the animation table, characters and objects in the projected plate can be made to appear in the foreground action depending upon the positioning of the split. In this case, by isolating the action in the lower righthand portion of the frame, the tyrannosaurus is made to emerge from behind the rock formation upon which the live-action characters are positioned.

VistaVision, however, was not without its share of problems. “The main problem for us was the steadiness,” explained Spencer Gill. “On our equipment, we had registration pins on just one side of the VistaVision frame, which meant we had seven perforations without anything holding them — as opposed to only three with standard 35mm. So you tend to have shaking on one side. Like the cliff shot, where the T-Rex is sneaking up behind the characters. Where he enters frame, the corner is buckling. Also, the problem tends to be cumulative, since the camera, projector and printer camera all have the same characteristics.”

Compounding difficulties even further was the sheer scarcity of VistaVision equipment. The effective utilization of the format by Effects Associates necessitated the custom fabrication of a camera, an optical printer and three process projectors.

Predictably, difficulties arose. “During one of my trips to Mexico,” Allen recalled, “the VistaVision camera — which we were using to shoot all of our backgrounds that we’d later be compositing with the models — the gears locked on it. I don’t know exactly what the problem was, but it froze. So the camera had to go back to the States with Jim, so that he and George Randle, who basically put the thing together, could see what happened. And during that time, of course, I had to keep shooting with a regular 4-perf camera. For that reason, we have some scenes in the picture that are done in regular 35mm, which perhaps don’t look quite as good as the others.”

Per contract, either Danforth or Allen was present throughout the principal photography phase to provide counsel and insure the proper preparation of the animation plates. Following four weeks on the main location in Los Organos, one week in Puerto Vallarta, and five at the Churubusco Studios in Mexico City, *Caveman*’s main unit packed up and returned to California, work completed. But for the crew at Effects Associates, the darkest days lay ahead. Danforth’s homecoming was greeted by news none too inviting. The firm that had been contracted to fabricate most of the VistaVision equipment had fallen three months behind in the delivery of the optical printer. Danforth therefore had to resort to other suppliers to assemble the process projectors, without which animation could not begin. “The supplier problem lost us several months from our preproduction schedule. I figure we lost another month-and-a-half to two months in the preproduction negotiation phase, the disputes over the deal memo, the rewriting of the script, the restoryboarding and all of those conferences. All together, we were probably four months behind according to my time table.”

As is common in films of this nature, there are frequently concepts born that receive varying amounts of consideration prior to being discarded for disparate reasons. On *Caveman*, one of these notions was the addition of “browsing shots” — incidental scenes of prehistoric creatures to suggest the presence of other life. The original treatment called for a brachiosaurus and a triceratops, an apparent throwback to Carl Gottlieb’s initial horned lizard concept. But during the scheduling of



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principal photography, the shots were scrubbed. The producers felt the time and money involved in shooting the “browsing” plates could be better spent elsewhere. However, because they were included in the original effects budget, Danforth had already set to work. “It seemed to me that these would be the things to start with. We could crank them out, give the producers some footage to look at, and then be able to have a little breather while we were getting the really refined dinosaurs ready to go. The sooner you can give them *something*, the better off you are, because it takes so long to do this work and they start getting nervous. So, I thought, ‘This is great.’ Randy had sculpted both the dinosaurs and already made a mold of the brachiosaurus when, of course — the best-laid plans gone awry — they cut them.”

The Effects Associates facility was basically a three setup operation. “Going into the picture,” Danforth recalled, “I realized that the producers wanted it good, but their *primary* concern was fast. So, the thinking was that if we had three models, we could probably have two shooting all the time. Some days we would be able to have three, but generally it would be one setting up and two shooting. Although it cost us more money and created some problems, three models was certainly better than one or two.”

All in-house animation effects were either done as rear-screen process shots or straight dioramic setups — the only exception being Dave Allen’s pterodactyl shots filmed at his Burbank studio. Subsidiary to *Caveman*’s other two dinosaur characters, the more conventionally conceived pterodactyl plays a brief role as a vengeful matriarch hellbent for neanderthal hide when a band of egg-poaching cavemen decide to make a foraging raid on her nest. Aside from three shots done by Pete Kleinow, the pterodactyl sequence was animated by Dave Allen. “When you see the pterodactyls in *One Million Years B.C.* flying and fighting with each other, it’s pretty amazing stuff — kind of jerky, but very energetic — not something you could do very well with the system I shot this bird with. However, I think you see something different in the look of this particular pterodactyl. It’s very precise and its movement almost suggests wind currents and updrafts.”

Nearly half of the cuts in the sequence were photographed at Allen’s studio utilizing a frontlight-backlight high-contrast traveling matte technique that generates its own mattes during the animation. The subject — in this case the pterodactyl — is braced by a jointed mount secured to a large sheet of clear plexiglass, the frame of which can be matted out if the composition of the shot requires a wider view. With care taken to avoid the mount, the model is then shot against a black translucent screen that can be burned out exposure-wise from behind with a fluorescent lighting board. For each animation move in a frontlight-backlight shot, two frames are exposed. “On the first picture,” Allen explained, “the ‘A’ frame, you have the lights of the fluorescent board off and the foreground lighting of the bird on, matched as well as you can to the lighting that the plate dictates. On the ‘B’ frame, all of the foreground lights go out and the fluorescent comes on, and you get a silhouette of the bird — your countermatte. Then you would usually want to go in and garbagematte around the bird, particularly if it’s a long ways away.”

When the animation has been completed, the shot is skipped out optically onto two separate pieces of film — the first, on color interpositive stock, containing only the pterodactyl against black; and the second, on high-contrast black-and-white stock, containing the corresponding countermatte. The countermatte is then run through an optical printer, together with an interpositive of the live-action background plate — in essence producing an unexposed pterodactyl-shaped “hole” in each

frame, which can then be filled in by running that partial composite once again with the earlier-isolated pterodactyl against black.

Frontlight-backlight proved to be the technique best-suited to photographing the pterodactyl under the given circumstances. “It’s very good for flying things,” assessed Allen, “because of the control. Of course, there are certain limitations. For instance, you can’t show both sides of the creature in the same shot very easily, if even at all. You could have front- and backlit pylons; or you could use bluescreen, which is easier to shoot because you don’t have to sequence your mattes while you’re shooting. However, it’s considerably more complicated to composite, and more expensive. But I do think that the quality of front- and backlight is superior to regular 35mm rear-projection process photography. If your 35mm plate has a reasonable range of contrast and very nice color saturation, your process can look almost as good; but in ordinary situations, the front and backlight is superior, because it is carried out on film emulsions that are designed for duplication, which regular process is not. Of course, you always run the risk of a matte line and that sort of thing, which you don’t get with process; so there are advantages and disadvantages to all ways.”

However, in one particular instance, despite the apparent successful completion of a portion of the pterodactyl sequence, a Turman-Foster directive yielded less than desirable results. “In two of the scenes,” Allen explained, “the producers wanted to alter the pterodactyl in size and make him larger. So the shots were recomposited, with the picture and the matte swelled about twenty-five percent. That cost us in terms of the matte fit. The producers were happy and got what they wanted — that’s the main thing. But the shots are not technically quite as good now as they were in the original composite.”

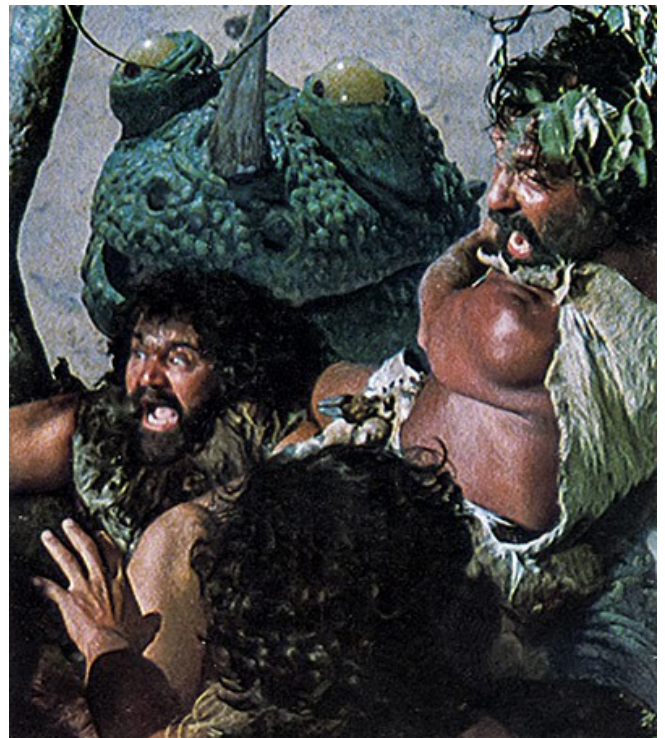
Another technique employed in the filming of the pterodactyl sequence was the introduction of a blur into the animation to prevent unsightly strobing, an imperfection often apparent in dimensional animation. Strobing can be all but eliminated by “streaking” the image — either by moving the camera or subject during exposure. “If his moves hadn’t been so precise and slow, and I’d had a mechanized system,” said Allen, “I could have done it by moving the camera. I did that on *Witch’s Brew*, but I had a looser track for that. Here, the puppet was on a long rod which essentially had a lot of spring in it, and I’d kind of flick the rod and let it vibrate back and forth a bit to get a certain grazing to the image. Of course, these are things that you really don’t appreciate unless you see it in a held frame.”

Regrettably, it is an undeniable fact of life that in the film business, like any other, personalities often collide. “Dave and I had a lot of trouble trying to figure out how to work together,” admitted Jim Danforth. “In retrospect, I probably made a mistake in hiring him in the first place. But *Caveman* was an enormous project, especially given the amount of time available to do it. I really needed some people I could rely on on this picture. Dave was certainly the next most experienced, so I was very pleased that he was willing to work on the film. But I think that neither one of us really deeply enough analyzed our own personal needs, our ways of working and our idiosyncracies. I think he found it very difficult to work for me because he felt I didn’t give him enough freedom or self-determinism. And because of his own personal characteristics, that formed blockages in his ability to function. Personally, I thought I was giving him a lot of freedom — of course, everybody sees things differently — but there were certain basic givens that I absolutely felt justified in insisting upon, since I had the final responsibility. My neck was on the block, not his.”

Ironically, during the more than eight months Danforth devoted to *Caveman*, he was able to animate only one shot before his withdrawal. And even that was excised from the final release. “I did a scene of the tyrannosaurus,” Danforth recalled, “which was to be a background for a traveling matte shot. I photographed Ringo Starr, Shelley Long and Dennis Quaid running back and forth being chased by the tyrannosaurus. Then, in front of that, we were going to matte Jack Gilford, who plays the blind character. All he hears are these voices, and he’s standing there trying to figure out what’s going on. Carl wanted it to be a badly designed shot on purpose — the kind of shot you would never normally do — a character, dead center in the middle of the frame, facing toward the camera while the action goes absolutely perpendicular across the screen behind him, with no framing objects or anything. It was meant to accentuate this sort of



Gog, the blind caveman stumbles into an unwary tyrannosaurus rex.



Scenes requiring human actors to be placed in front of animated characters were produced by photographing the live action against blue-backing and then optically

Bugs Bunny chase — back and forth, in and out of frame. I did the animation for that shot, and that was how we discovered we had unsteadiness in the process projector — the background plate was

combining that footage with a background plate of the hungry, but witless, tyrannosaurus about to impale himself upon Atouk's conveniently sharpened tree trunk.

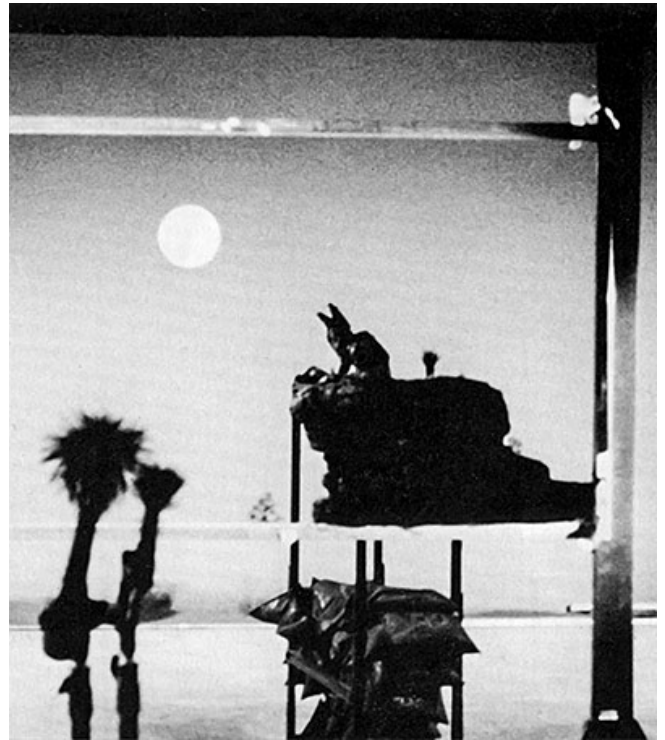
shaking relative to the miniature ground. Anyway, I had David Foster come out and look at the shot. And after all this work and all these late nights and this aggravation and really trying to get this stuff together, his comment — his only comment to me — was: 'You mean after eight months, that's it?' Wonderfull Couldn't he have said: 'Well, great. We're on our way.' Or: 'I like the tyrannosaurus.' Or anything? Even some specific negative comment I would have accepted, but a blanket sort of rejection like that was just really not what you'd call motivating."

Things were not going well at Effects Associates. The discovery of the unsteadiness in the process projectors was only the most recent in a series of setbacks. To date, the only footage in the can was Dave Allen's pterodactyl sequence. Taking into consideration the projector malfunctions, the delays and myriad other dilemmas, Danforth deemed the time ripe for drastic action. Having determined with some certainty the difficulty within the process projectors, Danforth reasoned he could repair them and deal with the few remaining pressing details, given a week of uninterrupted time. "I called David Foster and told him I wanted to shut down for a week. Assuming it was agreed, I wanted to give everybody a week off and just work by myself in peace, because I was really getting rattled. I could then get the stuff operational, everybody would come back, and we'd be able to start turning out some footage. I had been giving a lot of thought as to what to do about Dave, and so I told myself: 'You're taking a break here, Jim. If you're going to dispense with Dave Allen's services, this is the time to do it. It's not fair to give him a week off, have him come back and then lay him off.' I told Foster what I planned to do and he said, 'Fine, that's entirely your business.' So I came in the next morning ready to go — hot to trot on getting this problem solved — and I found a little note from Dave saying that the producers had requested that he take the pterodactyl so that he could do additional scenes, now that he was dismissed. The mitigating circumstances there were that I had told Dave he could have the pterodactyl when the picture was finished. I was really furious. I was annoyed that Dave had done it, but I was really furious that the producers had asked him to. It was really just more than I could comprehend. We had completed the pterodactyl sequence and delivered all the work, so it wasn't that they wanted to redo anything or were unhappy with anything. Probably to the contrary — they liked it and wanted to have more of it. But that was external to our deal.

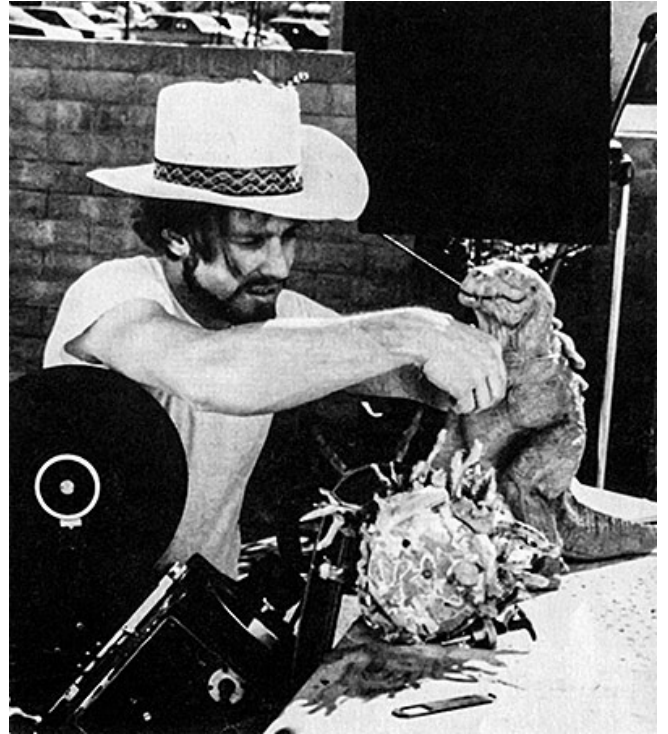
"Obviously, the taking of the pterodactyl was a minimal event. Other things were actually of far greater concern, such as the fact that they refused to give me any say in the editing of the effects sequences. But the attitude that it represented — in terms of our ability to communicate with each other — I felt was terminal. And my only options were to either go into heavy litigation to defend my rights as the contractor of these effects, to just grin and bear it, or to leave — which was in fact what I did."

Complicating the situation was the fact that Effects Associates, though funded by Turman-Foster, was actually owned by Jim Danforth. Fortunately, however, an agreement was reached. Effects Associates would honor the contract, personnel unaffected save for the exit of Danforth and the reinstatement of Dave Allen as supervisor.

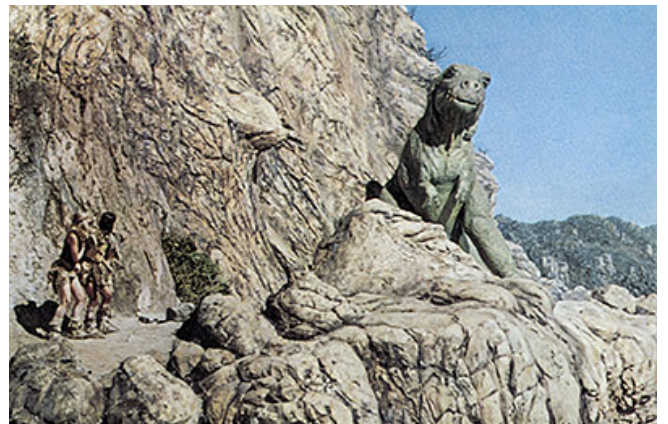
The outlook was grim, indeed. The April release date was only seven months away, and nearly all of the shots had yet to be completed. Dave Allen had inherited an unenviable situation. “My position on this film was more managerial than anything,” admitted Allen. “And in that respect, of perhaps less interest to people interested in the actual hands-on glamour of animation. Unlike a lot of other projects I’ve been involved with, creatively speaking, I didn’t have that much to do with this picture. I was not *the* animator. I did do some, but in fact, Randy Cook and Pete Kleinow did most of it. Instead, my job was to keep the animation humming along. The worst thing I could have done would have been to get terrifically committed to actually doing animation; because once you’re involved in a shoot, you are out of action in terms of what’s going on with the overall picture. So after I was put in charge, it seemed to me the best use of my time would be in knowing what the fellows doing the actual work would need so that their minds would be free and clear of distractions — not having to worry about problems connected with the sets and all that. I tried to take the bugs out of the whole organizational end of it, and we had to have things ready to go in order to make our shot schedule.”



Recurring shots of the howling lizard — built by Roger Dicken — were obtained by photographing the puppet through a Jim Danforth glass painting.



The tyrannosaurus, stoned on psychedelic berries, staggers about on a miniature cliffside deftly combined with liveaction location footage.



An extreme low-angle tyrannosaurus shot was required from the point of view of a caveman who is lying next to a fallen tree. Since a sky background was desired, Dave Allen set up the scene in an alley behind the effects facility and filmed it in daylight.

Nonetheless, Allen frequently found it necessary to roll up his sleeves and enter the fray at ground level — in one instance, to perform an ostensibly inextricable salvage operation. “The first effects shot in the picture is a double zoom-out starting on Ringo and a little lizard. Pulling back, a shadow comes across Ringo. We pull back again and see the horned lizard looking at the two of them. It’s the food chain thing. And the basic theory of that shot, which Jim Danforth worked out, was very creative. But the problem was that the shot of Ringo had been made wrong. Jim pointed that out while they were still on location, and it was reshot — but they shot it wrong *again*. I think there was a communication problem, and the Mexican operators just didn’t understand what was needed. But that was all we had to work with, so I had to figure out a way to make it work.

“Basically, there were two problems with the shot — one of which didn’t even become apparent until after I’d made a test on the whole setup when it was built. The problem was that there was a focus change involved in a shot like that — going from the little lizard back to Ringo and then going from Ringo to the rock behind him, where we see the horned lizard. But of course, the focus change alters the image size. If you’ve ever looked through a camera and run the focus, you’ll see that the image swells. So obviously, we had to be out of the part where you had a zoom-back when you’re going to have focus change. Otherwise, where the two images come together, you would see them breathing against each other. It would be swelling against the rock. In addition to that problem, the focus change came so late in the shot that Ringo was already set to run out of the scene. So we didn’t have time for the slow, measured pullback that was supposed to be a repeat of the pullback from the little lizard to Ringo. Then, to make matters even worse, as Ringo is turning to dash away, the camera was apparently not locked off and it was floating on the gearhead. The rock that the horned lizard appears to be on was actually mostly painting. And that painting was the last area where we had any hope of tying the two image areas together to match shadow values and everything. But when that was tested, the portion inside, where Ringo was standing, was just weaving all around. So in addition to everything else, I had to go to a point in that shot where I could make a little soft-edged area matte around Ringo, using a held frame where it joined up with the blend. That way he could move around in there without the unsteadiness being as apparent as it would have been against the hard-edged rock. Instead, the weave would tend to be absorbed in that mass. The only problem with that was that Ringo being in or out of the scene affected the ambient fill light, depending on what was reflected off of him. So when the split-rock pops on, there’s a slight feeling of different exposure in that area. Then I had to hold frames. After Ringo made his turn and look, there was about a foot where he wasn’t moving so much that I couldn’t squeeze it and just cheat myself some extra time. Finally, I accelerated the zoomback a lot, which I



Recurring shots of the howling lizard — built by Roger Dicken — were obtained by photographing the puppet through a In one of the film’s more atmospheric shots, Atouk scrambles up a tree as the tyrannosaurus approaches.

made sure was happening while the painting was breathing. These things are certainly compromises, but at least we were able to get the shot done.”

Two major sequences in *Caveman* necessitated the fashioning of a pair of miniature human puppets, scaled to be used in consort with the horned lizard. The subjects were Ringo Starr and Dennis Quaid. “We batted the Ringo puppet out in a couple of days,” recalled Cook. “I sculpted it and Roger Dicken did the clothes on it. Actually, since he was rather fully-clothed, he didn’t have to have a lot of body work or musculature, as opposed to the Dennis Quaid puppet which did. But in general, the human puppets were sculpted much better than you might expect, because we get fairly close to them in this picture. Most films don’t. Although on *Mighty Joe Young* they did some real gutsy things with miniature people — one of whom, by the way, supplied the armature for our Ringo puppet. Jim bought it somewhere as a collectable, I guess, and we ended up using it because it still worked, more or less. Having gotten to know it fairly well, though, I think maybe it’s not quite the armature it once was thirty years ago — it was a little cranky.”

In addition to the painstaking and meticulous attention to detail intrinsic to their craft, animators must often bring to bear a little technical ingenuity. Pete Kleinow, a master of inventiveness, found several opportunities on *Caveman* to exercise his prowess. Case in point — a One Zillion B.C. variety of melon upon which the horned lizard is dining prior to his capture. As the animated lizard sunk its teeth into the gourd, Kleinow employed pieces of modeling clay and strips of Handi-Wrap to suggest falling melon innards and dripping juice. To further enhance the effect, tissue paper was stuffed into the lizard’s throat to simulate ingestion. However, that proved too subtle to be recorded by the camera.

Kleinow’s skill was again brought to bear in a scene where Dennis Quaid, wrestling furiously with the tail of the horned lizard, is tossed headlong through the air. For the duration of his flight, the miniature Quaid was braced from above. “Rather than using separate fine wires,” Kleinow explained, “I did it with a single thickness of steel wire. It was my old ‘Gumby’ experience; I used to fly things on ‘Gumby’ and paint the wires out frame by frame. If you do that, there’s no reason why they have to be real thin. Of course, you have to paint both sides of the wire — a shadow side and a key-lit side — but if you have enough time, you can do it. When it’s going through shadows, though, it can get pretty complicated.”



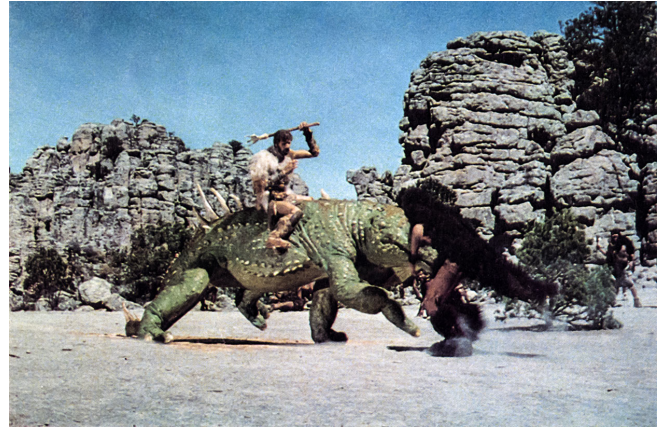
Randall William Cook animates the horned lizard and puppet Ringo during the final battle sequence.

Shadows, or the lack of them, presented another challenge to Kleinow in a shot where the horned lizard pushes over a tree in which the cavemen have taken refuge. "When the lizard climbed up, he should have cast a shadow against the tree, because the sun was coming straight at his back. But obviously, since there was no lizard on location, there was no shadow. So I had to make an artificial shadow, frame by frame, with some heavy neutral density material. I cut it out and pasted it right on the back of the rear projection screen, formed to fit. That was in there for about thirty or thirty-six frames."

Often the most minute oversight or mistake is enough to seal the fate of an animation shot. The second effects shot of the film, a cut of the horned lizard crawling down off an outcropping of rocks and chasing after Ringo, had to be animated three times by Pete Kleinow prior to being judged suitable. "On my second attempt, the daily came back and there was a very weird looking light that was spilling across the lizard as he progressed. It looked like flickering reflections and we couldn't figure what the hell it was. It looked like it was coming from off the set, and for awhile we thought maybe we had a hole in the ceiling, or something. Finally, I did some backtracking and found that it was this one fill light that was coming through a slot between two rocks — just a crazy idiosyncrasy of the way the set was built."

Yet another application of the line-up technique was employed late in the first tyrannosaurus sequence. In it, the ubiquitous dinosaur encounters Ringo and company, potential candidates for his next meal. In an attempt to fend off the approaching creature, Ringo hefts a conveniently sharpened tree trunk into position and watches gleefully as the tyrannosaurus proceeds to impale himself. The actual penetration was shot by Dave Allen. However, the following cut of Ringo being lifted by the ascending trunk called for a different setup. "The real tree was on a rig," Kleinow explained, "with Ringo actually hanging from it. I had to line up the dinosaur in front to match the motion of the tree going up. So when he raises back, Ringo does, too. But the tyrannosaurus didn't perfectly cover the rig, so there were a couple of places where I had to add some material to his belly to cover the part of the rig that was sticking out."

Carl Gottlieb had his own concept for the spearing sequence, as well as the subsequent reappearances by the tyrannosaurus. "That scene was originally designed to be more scary than it was," he revealed. "I'm convinced that contemporary audiences will buy a lot more violence in the name of comedy, but the producers never seemed to understand that. They didn't want to show the dinosaur injured. 'No blood! He can't be hurt.' But logically, when he gets speared, there should have been a little blood. And the closeups were designed as roars of anger, not belches. Also, I wanted him to continue having that stick in his shoulder. So when he reappears, he's still got the stick in his shoulder, remembers Ringo as the guy who stuck him, goes after him and burns his foot. The third time you see him, he's got a burned foot, a stick in his shoulder, and now he's learned to



For one shot in which the rear-projected John Matuszak character had to pass in front of the animated puppet, Cook utilized a puppet likeness of the actor and carefully aligned it over the background image for the few frames required to achieve the desired illusion.

approach Ringo a little more cautiously. The producers never saw it that way. So they cut all the blood, they cut the stick in the shoulder and they changed the roars of rage into belches.”

“All of us strove for a naturalistic animation style,” Cook revealed, “but with a very comedic orientation. And I think each of us achieved it at different times. Early on, one of the first shots that was animated with the tyrannosaurus was something Pete Kleinow did. It was the scene where the dinosaur had the three principals cornered and was going to attack. I remembered this shot from doing the boards and I’d had my eye on it for a long time. Pete was going to do it, which was fine with me — there was plenty of hard work to go around. But, quite naturally, I’d figured out how I would have done it, so I quizzed Pete: ‘What’s happening with this shot?’ And he said: Oh, I’m just going to have him come in, roar at the people and move ahead.’ This was before we had really established that the dinosaurs were going to be as wacky as they ended up being. And I said: ‘Yeah, but this is a comedy — a rare chance to do something really dumb. Why not have him come in and rub his hands together and lick his chops? That sort of thing.’ And Pete said: ‘That’d be great, but I don’t know. The producers might not go for it.’ So at lunch we talked about it, and Dave said: ‘What the hell. They can only turn it down.’ So Pete went ahead and animated it. He had him lick his chops and wiggle his eyebrows; and he didn’t just have him rub his hands — he had him *wring* them like a silent movie villain. It was neat. Just great. And, of course, the producers ate it up. ‘Yeah. More of that stuff, guys. More of that stuff.’ So, we gave it to them — by the shovelful.

“When we did the tyrannosaurus staggering around on the cliff, blissfully sedated, I’d wanted to do a much more rubbery-legged drunk-type thing. But I couldn’t get the armature to do that, for a number of reasons. As a result, we had to soften the action a little bit. Not a lot. It’s still schtick, vaudeville drunk business, but it’s not quite as excessive as I wanted it to be. Sometimes, the armatures make you do what you have to do — often while you’re animating. If an arm falls off or something, then you’re probably going to have to stop and fix it. Although there are times when you might be tempted to say: ‘Well, we’ll just stop moving the arm.’ I would anyway — and have. But, generally you can get away with murder. You can take the puppet right out of the scene, fix it, put it back and continue — and you might get away with it. All kinds of crazy things happen. Lights blow out during shots and get replaced. Hunks of puppets fall off. An eye falls out and bounces across the studio. You go chasing after it, step on it, break it and go get another one. Of course, that’s stuff you just don’t think about while you’re watching these things — unless, of course, it’s obvious there was a problem someplace.”

Culminating *Caveman* is a climactic battle sequence in which Ringo Starr and his cohorts attack John Matuszak’s tribe. In the midst of the skirmish, Ringo enters atop the now-tamed horned lizard, turning the melee’s tide from his mount. “It’s the kind of thing you see illustrated an awful lot in science fiction and fantasy art,” commented Dave Allen. “These large lumbering lizard-things with men or other monsters on their backs riding along.” A traditional means of achieving such a sequence would have been to intercut live-action closeups of Ringo with long shots of the miniature Ringo puppet astride the horned lizard. Jim Danforth, however, had wanted to create an animation “first” by placing the live-action Ringo directly onto his animated mount. So, during the main shoot in Mexico, Danforth had supervised the photography of a series of shots featuring Ringo Starr atop a full-size mechanical mock-up of the horned lizard’s back, built by Roy Arbogast. Additional footage from the same angles was shot with just the background scenery alone. The idea was that

later, in optical, a split-screen composite could be made combining the top half of the Ringo frame with the bottom half of the empty frame so that Ringo, from the waist up, would appear to be sitting in mid-air. This footage could then be projected behind a standard animation table upon which the horned lizard puppet would be positioned, complete with the severed lower torso and legs of the Ringo puppet. The animated foreground subjects could then be aligned to match the live-action image of Ringo on the plate, with the actual split obscured by his bulky garb. Then, by animating the legs and lizard to match the mechanized rig's motion, the illusion of a live Ringo Starr riding a prehistoric creature could be effected.

"The concept of those shots," Dave Allen revealed, "was something Jim had worked out, and he wanted to do them himself. And frankly, the rest of us were relieved that we wouldn't have to be doing it. Of course, guess what happened! Anyway, when I took over I began familiarizing myself with the shots and what had to be done for them. And what concerned me was, if those shots didn't work, there wasn't any other coverage of the same action from wider views that we could have done with just the puppets. So there was no retrenching position — it *had* to work out."

As simple as the setup may have seemed, the animation of the appropriately christened "split-Ringo" shots was an entirely different matter. The first attempt was made by Pete Kleinow. Unfortunately, it was not a success. "It was virtually impossible for me to do the way it should have been done," Kleinow admitted, "because the plate was not prepared right. The rig was going back and forth, up and down, from side to side. So Ringo was constantly changing planes, rotating and getting larger. It was horrendous, because there was no registration point to go by — all we could do was try to line up the real Ringo with the bottom half of the torso. It sounds simple, but it was not. I found it impossible." After four frustratingly unsuccessful attempts, Kleinow deferred to Dave Allen.

"Everybody approaches something like that differently," reflected Allen. "Pete's an awfully good animator, but for whatever reason, it just wasn't working out. So I gave it a shot. I think Pete was perhaps trying to be too literal with what Ringo was doing versus what he wanted the little puppet to do. So he was probably making moves that were too drastic to catch up to Ringo. Whereas I was more willing to let the thing float a little more independently of Ringo. I was trying to reproduce the general action of what Ringo was doing rather than being concerned with what was happening frame by frame.

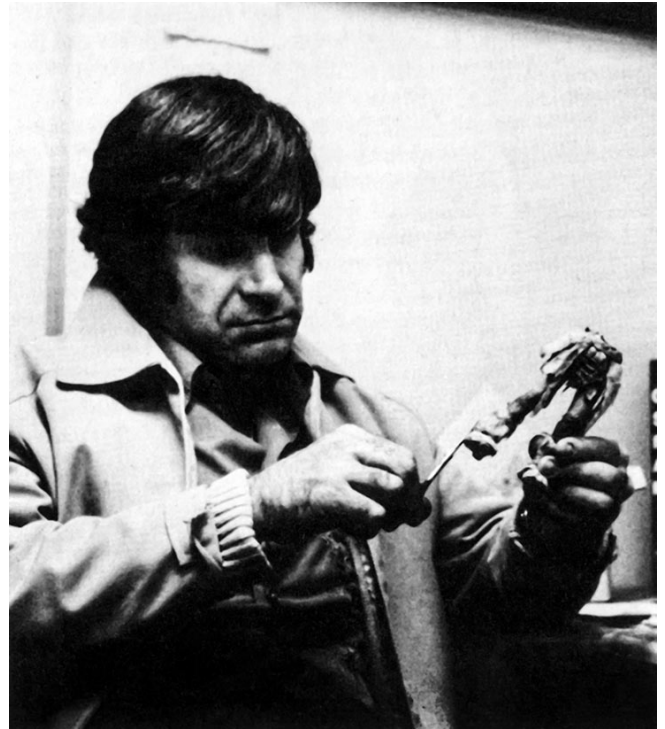


For two of the film's most difficult scenes, a live-action Ringo Starr was to be placed directly on top of the animated homed lizard. The initial background plate was prepared by having Starr ride on Roy Arbogast's mock-up of the lizard's back, which was built over an electric golf cart. The plate was then split in the effects facility's optical department by Spencer Gill, with the upper portion — containing Starr from the waist up — combined with the lower portion derived from a second exposure on the unoccupied setup. The final shot was obtained by painstakingly aligning the lizard puppet, being "ridden" by the lower half of the Ringo puppet, with the live-action upper half of the actor projected onto the rear screen.

“First of all, in doing something like this, you have to be familiar with what the action is: Ringo’s riding on top of a mechanical contraption that’s moving and you have to cover up. You have to do frame counts. But the moves are so microscopic that you can’t measure them. You just know that you have to go from here to here in so many frames. You have to plot heights even though you know it’s not going to be exactly right because there are so many perspectives — Ringo is doing a lot of compound moves on top of that saddle. You’re trying to pick off points of registration and hold onto them. And if you can’t do that, you have to try and make sure that you’re losing them in even degrees so there isn’t a big horrible ‘pop.’ I think what I was able to contribute to the shots was keeping everything moving in a non-distracting manner. No sudden pops or shifts to make the eye go where all the work is. You can do that almost like a ventriloquist makes the audience look at the dummy — give the lizard big action so that Ringo is there, but maybe not as important. It’s all intuition.

“Unfortunately, I have a flicker in that scene, simply because I was opening the lens to check for the registration of each position and then closing it back down again. Ordinarily you would never do that, but these lenses had positive click stops, and I’d made a test with them before and they seemed to be flickerless. In fact, I did exactly the same thing with the same lens on the shot of the dinosaur running up onto the stake and it was absolutely perfect. So I was really surprised when there was a problem all of a sudden. It turned out that this particular f-stop had a little slop in it, so we ended up with a slight flicker in the shadow areas. I probably could have optically gotten rid of most of it by using part of a held frame, because it’s most noticeable in the upper lefthand corner, but Ringo’s spear moves through that area at one point, so we couldn’t even do that.”

The second “split-Ringo” shot required a slight modification. “I looked at the plate back and forth,” continued Allen, “and I reasoned that because you



Roger Dicken prepares the partial puppet.

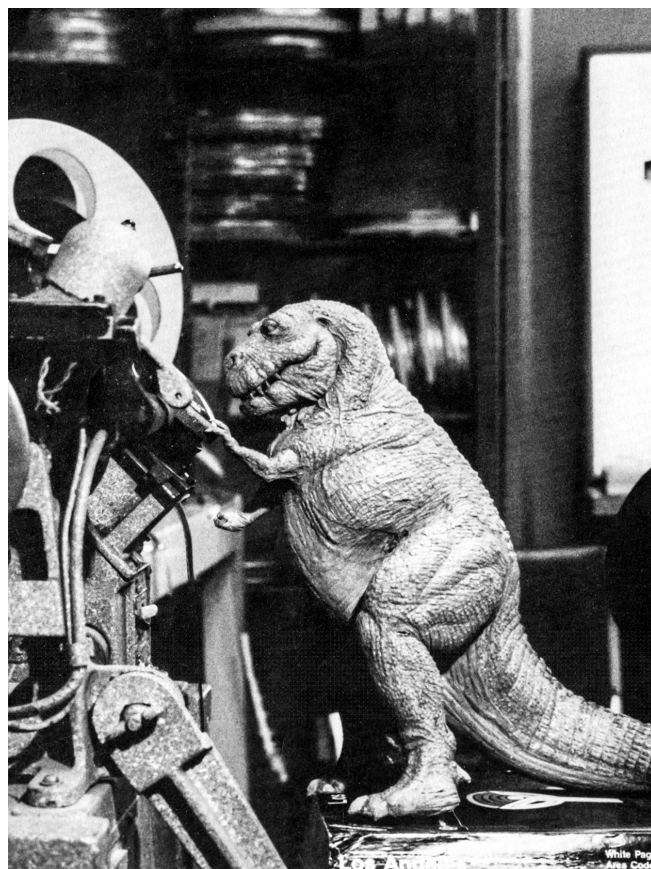


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didn't see Ringo's thigh, it would be better if I actually detached the leg at the knee on the one side. So the top of the thigh, hip and whole other leg I just discarded. Plus, I felt in order to make it work, I had to use the earlier part of the take, rather than the section the editorial department had selected because he came around too far. So I had to push it to the front part of the action where the mock-up he was riding was going very slowly, almost like a big giant thing would be. And that, of course, presented a different kind of problem because the moves were so small. The elements might be drifting apart and you wouldn't even know it until you saw it in dailies. So it certainly wasn't easy. Of course, that's the attraction of stop-motion — no matter what the problems are, you've got all the time in the world between frames to figure out how to solve them."

Those shots not done by splitting utilized the undismembered Ringo puppet. One in particular, animated by Cook, was a scene of Ringo atop the horned lizard clubbing a live-action *caveman*. "That shot was going to be a 'split-Ringo.' Dave decided however, to use the puppet instead. So we simply shot it with attention given to the fact that it had to hit certain cues — the club swing of the puppet had to exactly duplicate the real Ringo's club swing. We studied the background footage closely, made sure it would match and animated it straight ahead. Then for good measure, we threw in a little shadow being cast by the running guy onto the monster and the ground underneath it. It's all over in two seconds. I also animated another shot in that scene where the live-action John Matuszak had to run and pull the Ringo puppet off his mount. But the action was blocked in such a way that it was absolutely necessary to have Matuszak cross in front of the horned lizard — which is impossible, at least theoretically. But for about eight frames, we actually have Matuszak going in *front* of the puppet. There are a number of ways you can do that sort of thing. You can do a paper cutout, you can paint on glass, you can matte it in or you can use model substitutions." In point of fact, Cook employed a rather novel application of the latter approach. First, he took the Dennis Quaid puppet and redressed the figure to look like John Matuszak — a process which also entailed beefing up the left leg. The right leg was removed since it could still be recorded satisfactorily from the rear-projected background

the lower portion derived from a second exposure on the unoccupied setup. The final shot was obtained by painstakingly aligning the lizard puppet, being "ridden" by the lower half of the Ringo puppet, with the live-action upper half of the actor projected onto the rear screen of the lizard's back, which was built over an electric golf cart. The plate was then split in the effects facility's optical department by Spencer Gill, with the upper portion — containing Starr from the waist up — combined with the lower portion derived from a second exposure on the unoccupied setup. The final shot was obtained by painstakingly aligning the lizard puppet, being "ridden" by the lower half of the Ringo puppet, with the live-action upper half of the actor projected onto the rear screen.



An attentive tyrannosaurus rex reviews his previous day's performance as the daily workprint is run through the effects facility's Moviola.

plate. Then, when the scene progressed to the point where the live-action Matuszak went behind the homed lizard, Cook aligned his human figure in front of the lizard so that it concealed the Matuszak plate image. From there, he was able to animate the partial puppet for the limited number of frames required to complete the shot, and yet have it indiscernible from the rest of the live plate action.

“Nobody will notice the pass in front of the monster. It’s just there for my own satisfaction. By the way, the lizard in that scene has to play a secondary role. He’s not as much a character as he is a vehicle for Ringo to ride; and as a result, he doesn’t get to do the sort of fun, eye-rolling stuff that he was doing earlier in the picture — which is too bad. But if he was sticking his tongue out and hamming it up, he’d be calling attention to himself, which we didn’t really want at that point. So those scenes, while technically all right, just weren’t that much of a joy to animate.”

Spontaneity has always been an inherent factor of the animation process. It is especially conducive to a film of this nature and vulnerable to a person with a keen sense of humor. “Every animator works differently,” asserted Cook, “and I can only speak for myself, but I usually have a very good idea of what I want. However, I am willing to improvise if something strikes me during the course of a shot — as long as it’s appropriate to the character of the creature and augmentative to the scene. One bit I did was where the tyrannosaurus had fallen off the cliff and was moving around groggily. And since his head was so close to his chest at that point, I figured that it would be appropriate to have him put his hands up to his head do an ‘Oh, my god! What a headache!’ bit. I did that and it paid off. That was a primary example of a thing that just came up. But if you come up with a great bit of business, and it’s inappropriate, then you’re best advised to stay away from it. Sometimes you’ll be tempted and really have to fight it. You might want to do a tail lash, or something like that, but maybe it would be distracting for the character. Your eye would go to that part of the frame and miss something else. Sometimes, you really just have to sublimate. That’s the hardest animation for me — where the audience’s eyes need to be going to something other than the creature. The monster can’t be stealing the scene; but he’s still got to be moving subtly, or else he’ll just look like a big statue sitting there. Or even worse — a little statue.

“We’ve anthropomorphized our creatures a lot. They’re behaving more like human buffoons than like dinosaurs — doing takes, doing bits with their eyes. You can see in a lot of the shots what the dinosaurs are thinking. And it’s usually on a different level than a Harryhausen creature thinks. His creatures aren’t asked to perform comic schtick, because a cyclops doing a pratfall might make him slightly less fearsome. Ray’s creatures perform the kind of melodrama appropriate to his kind of picture, and are successful because he’s such a master of pantomime. But *Caveman* is another story — the movie is so nuts, you could damn well make the monsters do anything you wanted.”

Well, almost anything. The animators were given a fairly free hand in the character animation, the spontaneity of which yielded results that months of storyboarding could not. However, in one instance, the producers balked at the apparent trespass of the film’s comedic bounds. Cook, the victim, explained: “It was the scene where Jack Gilford, who plays the blind man, has been poking around the tyrannosaur’s, shall we say, underbelly. Actually, poking around his little tyrannosaur testicles. He’s got sort of a bulge under there like some tight designer tyrannosaur skin. Nevertheless, lucky me, I got to do the reaction shots. And I really kind of got off on them, so to speak. That’s the kind of animation I like — character stuff and loony stuff. But when I had the

dinosaur react to being slapped in the gonads by the blind man's stick, I did a 'pain take' that was too hammy. I mean, he was rolling his eyes, doing all sorts of stuff. And the producers said: 'Oh, gee. That's a little *much*, guys.' So I had to redo that one, but I really didn't have my heart in it the second time. I just had him give a little roar and a turn. It wasn't a great shot. But I guess they just didn't want it to be in poor taste. Of course, we all know how tasteful the rest of the movie is. Really, you'd never think that people walking through dinosaur shit could be brought off with such wit and panache."

Working through February 1980, the Effects Associates crew executed a total of 107 animation cuts which made their way into the final release print. Although *Caveman* found itself in unfortunate circumstances at United Artists following the *Heaven's Gate* debacle, and despite poor advertising support, it fared relatively well in a sagging boxoffice season. "From the start," remarked Carl Gottlieb, "we were treated like a poor relation — a low-budget, throwaway, drive-in, 'B' picture. They never expected us to get good reviews in *The New Yorker*, *Los Angeles Times* and places like that. But in the previews, it tested strongest with young people under twenty-one. So they decided that was the target audience and to hell with the rest. That's the kind of narrow, stupid thinking that's reducing their profits on the film, because they didn't have enough faith in it to market it like a real picture."

Despite the seemingly catastrophic states of turmoil *Caveman* endured, the only real casualty of the production was Jim Danforth. Even he, however, was able to exit with integrity intact — a shade more cynical, perhaps — and write it off as yet another bout with myopic producers. For first-time director Gottlieb, the experience was far more rewarding, and much less traumatic. "A lot of people — Jim Danforth especially — have said that most directors only make one effects film because of the problems involved. I don't feel that way at all. I *like* effects, and I think they came out real well in *Caveman*. In fact, it works out that they amount to almost ten percent of the picture. Some actors don't have that much time on screen. Effects are the *only* way to make things real. When you're making up your own world as a writer, you have no limitations. One of the script lines in *Conan* was: 'The earth opens up and an army of six thousand trolls emerges bearing shining weapons.' *Easy* to write, but impossible to achieve — without effects."

In hindsight, the effects work in *Caveman* was met with unilaterally good reaction. And fortunately, it may introduce the grand old art of stop-motion animation to a new generation of youngsters weaned on careening starships, who may yet find that fantasy is not eternally spacebound. It's certainly not reasonable to expect that *Caveman* will be the catalyst to make a languid film industry rush into a dinosaur film cycle, but it is likely to enter the stable of cult classics, perennially resurrected for a myriad of midnight showings — a distinction owing perhaps more than anything else to the kinetic performances of its miniature stop-motion scene-stealers.

"Don't get me wrong," Dave Allen concluded. "I'm image one of the hardest people on the use of effects to rescue a picture. I just hate that. But having looked at all the footage we did, cut head-to-head — aggregated like that — I couldn't help but think to myself: 'Gee, this stuff is pretty darn good. It's bound to enhance the picture.' And I think it does. Way back in the beginning, when we were just getting started on this project, I could already see the reviews: 'Ringo Starr, Barbara Bach and John Matuszak can now be seen cavorting in United Artists' prehistoric comedy adventure, *Caveman*. But the *real* stars of the picture are...' "

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